

DEC Scraps Upgrade Plan For Decsystems

By Ed Scannell
CW Staff

ST. LOUIS — Digital Equipment Corp. has decided to scrap a two-year-old project to develop high-end systems that would offer an upgrade path for its Decsystem-10 and 20 computer users. Instead, the firm will offer ways to tie the 36-bit computer systems into its 32-bit VAX-11 superminicomputer line.

That announcement was made here last week by the company at its annual Decus users group meeting. Despite the firm's insistence that it is not abandoning the Decsystem products or customers, most users at the meeting were surprised and disappointed by the decision, a company spokesman said.

Code-named "Jupiter," the project promised to produce systems compatible with but four to five times faster than the Decsystem family of

mainframes. However, DEC apparently decided to abandon the Decsystem 36-bit architecture — inherited from the firm's earlier PDP-10 minicomputer — since all of DEC's currently produced systems incorporate either 16-bit or 32-bit architectures.

Instead, DEC reportedly plans to develop ways to tie the 36-bit Decsystems into 32-bit VAX-11 superminicomputers via DEC's "interconnect cluster concept," which it has been espousing for more than a year, as well as its Xerox Corp. Ethernet local-area network product.

There are currently about 1,500 Decsystem-10 and 20 users worldwide, according to International Data Corp. of Framingham, Mass. At last week's users group meeting, DEC officials attempted to allay any fears of abandonment Decsystem users might feel by saying the com-

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Packwood Set To Sponsor Bill Covering Bypass

By Phil Hirsch

CW Washington Bureau

WASHINGTON, D.C. — Companies that bypass their local telephone networks will still have to help subsidize those networks if a new U.S. Senate communications bill is enacted in its presently proposed form.

Details of the measure, which will be formally introduced in the Senate late next month, were revealed here last week at a press conference called by its sponsor, Sen. Bob Packwood (R-Ore.), chairman of the Senate Commerce Committee.

Although the Federal Communications Commission's new access charging plan requires long-distance carriers to subsidize local exchange operations through contributions to a "universal service fund," Packwood said he is concerned that this will not keep local telephone rates, particularly for rural residential customers, from rising. Growing use of bypass technology by major companies exacerbates the problem, he ex-

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House Votes to Repeal 'Withholding at Source' Measure

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — The U.S. House of Representatives voted recently to repeal the controversial tax regulations that require financial institutions and corporations to withhold 10% of customers' interest and dividend payments. The bill now goes to the Senate, which previously approved a four-year delay on the withholding measure.

President Reagan has threatened to veto any legislation repealing the controversial "withholding at the source" regulation, part of the 1982 Tax Equity and Fiscal Responsibility Act. Reagan did not immediately comment on the 382-41 vote in the House, which took place May 17, noting during a press conference that the House might compromise with the Senate bill, which he sees as the lesser of two evils.

Senate support for its own delay legislation, however, has

waned in the face of complaints from the private sector that reporting requirements in the Senate measure would be as burdensome as the original withholding provision. In preparation for the withholding provision, many large financial institutions and corporations have spent millions of dollars in reprogramming, customer notification and the printing of necessary forms.

In the meantime, the July 1 withholding implementation date nears, forcing companies to complete preparations for the 10% withholding requirement. Some firms have complained that if repeal goes through at this late date, they will be unable to recoup their preparation costs through increased customer charges.

However, spokesmen for the banking industry, which is spearheading the repeal movement, argue that repeal still is economically preferable to implementing the regulation.

New CPUs Replace HP 3000 Trio

By Ed Scannell

CW Staff

PALO ALTO, Calif. — Hewlett-Packard Co. last week replaced three members in its HP 3000 series family with systems that are reportedly 20% to 100% faster and capable of supporting more terminals than their predecessors.

At the same time, the firm also introduced the fifth and latest version of its MPE operating system, designed to run on the three processors.

The new computers include the 3000 Series 68, which is said to be 30% to 100% faster than and replaces the Series 64; the mid-range Series 48, which offers 20% to 30% more processing power than the obsolete Series 44; and the low-end Series 42, which is reportedly 20% to 30% faster than its precursor, the Series 40. All three systems are said to be software-compatible with other members in the HP 3000 family.

The Series 42, 48 and 68 are expected to compete for market share against systems made by IBM, ranging from the System/38 to "almost all of the top of the 4341 line," a spokesman said. However, benchmarks comparing HP's systems against IBM's were not available at press time.

Described by an HP spokesman as a distributed mainframe, the 32-bit Series 68 holds up to 8M bytes of main memory and can support up to 400 terminals, 336 of which can be point-to-point. The system can also accommodate up to 24 disk drives, for a storage capacity of 9.5G bytes of data, and can handle 24 intelligent network processors.

(Continued on Page 4)

IBI Meeting Held in Havana Last Week

Third World Discusses High-Tech Crisis

By Jake Kirchner

CW Washington Bureau

HAVANA, Cuba — Representatives of three dozen nations, most of them from the Third World, met here last week to address what they see as a crisis in their high-technology development.

The crisis, according to the Rome-based Intergovernmental Bureau for Informatics, the meeting's sponsor, is the failure of developing countries to apply data processing and telecommunications technologies to facili-

tate economic and social development.

With most of the developing world still locked in the economic doldrums from which the industrialized nations are just now emerging, the IBI sees the already significant high-technology disparity between the two sectors as likely to increase in the near future, further exacerbating the Third World's developmental problems.

In addition, according to many of the approximately 300 participants at

last week's meeting, the advent of inexpensive but powerful microelectronics offers poorer nations the chance to leapfrog several generations of computer development and become full participants in the information age in a relatively short time. These nations see informatics — the combination of data processing, telecommunications, information services and other related technologies — as vital to the development of almost all sectors of individual coun-

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Professor Files Lawsuit Over Altos 8000-7

LOS ANGELES — Claiming that the abilities of his Altos Computer Systems, Inc. Model ACS 8000-7 system were misrepresented, a professor at the University of California at Los Angeles (UCLA) has filed a \$4.1 million lawsuit against Altos and the consulting firm that recommended the system.

John W. Buckley's suit against Altos and Thorpe Datasystems, Inc. maintains that Buckley relied on advertisements published by Altos and the professional recommendation of Robert Thorpe, a principal of Thorpe

Datasystems. According to the complaint, the ACS 8000-7 was represented as a multiuser system that can accommodate four simultaneous users with a usable random-access memory (RAM) of 208K bytes and a variety of available software applications.

However, a press release issued under the letterhead of Buckley's Los Angeles law firm of Romney, Golant, Martin, Disner & Ashen maintained that the RAM portion of the memory of the ACS 8000-7 is "divided into four distinct segments of only 48K bytes each, which cannot be combined and which individually are each inadequate to permit any useful programming applications."

Furthermore, the press release

claimed that some of the advertised software packages, including Micropro International Corp.'s Wordstar word processing package, can be used by no more than one Altos user at a time.

The complaint charges the defendants with fraudulent inducement, breach of warranty, breach of contract and negligence. It seeks \$100,000 in actual damages and punitive damages of \$2 million against Altos on one count and \$2 million against all the defendants on a second count, derived from what is charged by the complaint to be the fraudulent and bad faith conduct of the defendants.

Altos refused to comment on the case.

Correction

In last week's article spotlighting Datapro Research Corp.'s annual user survey of minicomputers and small business systems [CW, May 23], *Computerworld* reported that Basic Four Information Systems Division of Management Assistance, Inc. took top honors in the systems poll in terms of overall user satisfaction. In fact, Microdata Corp. should have been listed as the overall winner in the report with a rating of 3.65 out of a possible 4.0, while Basic Four finished in 12th place with a 3.18 rating.

The reporting error has been traced to a series of preliminary summary charts supplied to *Computerworld* by Datapro in which the research firm inadvertently switched the figures attributed to both Microdata and Basic Four. The preliminary charts, which did not appear in *Computerworld*, wrongly showed Basic Four as the clear winner. All other results in the charts appear to be accurate.

Computerworld regrets the error and any confusion to our readers caused by the inaccurate information.

Micro Magazine Publisher Merges With CW Communications

Wayne Green, Inc., publisher of five magazines for the personal computer field, has reached an agreement to merge with CW Communications/Inc. (CWCI). The transaction is valued at \$60 million.

Based in Peterborough, N.H., Wayne Green, Inc. publishes *Microcomputing* magazine, *Desktop Computing*, *80-Micro* for Radio Shack computer users, *Incider* for Apple Computer, Inc. Apple users and *Hotcoco* for Radio Shack color computer users. Several of these publications are available in magnetic diskette versions.

The company also has published more than 40 books on the personal computer field.

CW Communications/Inc., Framingham, Mass., publishes *Com-*

puterworld newspaper and 22 other computer-related publications in 18 countries.

"The personal computer field is the fast-growing part of the high-tech industry," Patrick J. McGovern, chairman of the board of CWCI, said. "We're proud to have the publications of Wayne Green, Inc. as part of our global publication family."

"Together, we'll be the largest computer publishers in the world," Wayne Green, owner of Wayne Green, Inc., stated. "Our combined strengths will allow us to grow as rapidly as the micro-computing world."

Green added that "we are planning a 300% growth this year, beginning with a new magazine in January."

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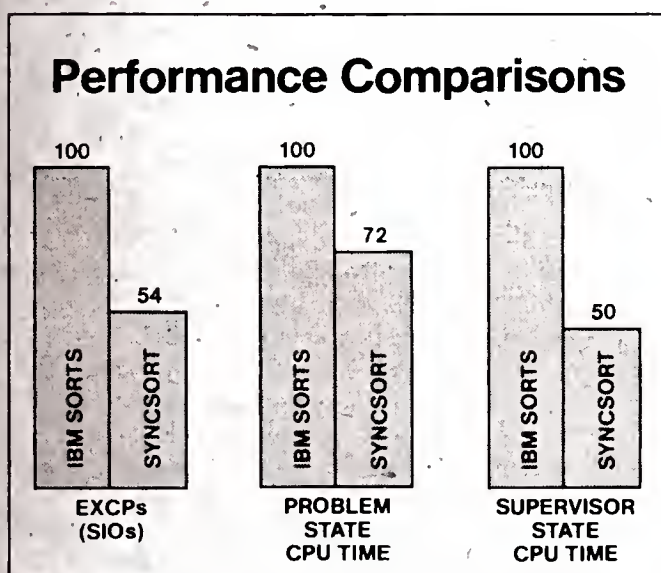
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(3) One of the Top Four Software Products according to Datamation:

Datamation's "1982 Systems Software Survey," conducted by Data Decisions, gave top honors to a select group of four software products. SyncSort was one of them, with 71% of those polled rating its performance "outstanding."

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Microdata Settles Suit Filed by Express X Users

By Jeffery Beeler

CW West Coast Bureau

PORTLAND, Ore. — Microdata Corp. has reached an out-of-court settlement with two customer companies that had sued the vendor for fraud and breach of expressed warranty.

Under the settlement, Contact Lumber Co. and Call Systems, Inc. have agreed to drop their two-year-old civil suit against Microdata on the condition that the vendor pay the plaintiffs \$150,000 in damages. Microdata has also agreed to provide the two user firms with "certain other considerations, which will remain confidential," according to the plaintiffs' legal counsel, Micah Stolowitz.

A decision to settle the \$600,000 lawsuit came on the evening of May 18, one day before the case was scheduled to go to trial, he said.

Both Contact Lumber and Call

Systems declined to comment on the settlement's terms or possible implications, according to their attorney, a member of the area law firm of Haugh and Foote.

Also refusing comment was Microdata's lawyer in the case, Barry Laubscher, who referred all inquiries to Henry Kohlmann, the company's general counsel. Kohlmann was reportedly traveling last week and was unavailable for an interview.

Ended a Legal Battle

The settlement ended a legal battle that began in July 1981 when the two user organizations sued Microdata for selling them three minicomputer systems that the vendor allegedly "knew" were unable to operate as advertised, Stolowitz said.

Filed here in U.S. District Court, the suit accused Microdata of supplying Contact Lumber and Call Sys-

tems with three Express X configurations whose hardware and Emos operating systems were said to be defective and seriously incomplete.

"In the computer industry, it's not unusual for companies to market new products before they are fully developed," Stolowitz said. "But in the case involving Contact Lumber and Call Systems, the development of the products was a long way from completion."

In theory, Emos was supposed to support multiple users at the same time. But the two plaintiffs said they soon discovered the performance claims were greatly exaggerated. "Emos could run OK with one user and could run slowly with two users, but that was about the extent of the operating system's support capabilities," Stolowitz said.

The control program also suffered from numerous unexplained crashes and was marred by file integrity problems, according to Stolowitz. "Emos was losing data and often updated one file into the wrong file," he said.

Contact Lumber and Call Systems began using the control program in 1977. Roughly two years later, Microdata ceased all its Emos development efforts.

Stolowitz cited a sworn deposition in which a software official with the Irvine, Calif.-based vendor reportedly described Emos as only 50% to 70% complete when it was finally killed in 1979.

Other problems, meanwhile, apparently plagued the users' Microdata hardware. By about 1980, the plaintiffs had replaced their Express X hardware with newer Express III equipment.

In the end, the Microdata systems were scrapped in favor of a rival configuration from Data General Corp., Stolowitz said.

The combination of hardware and control program problems roughly doubled Call Systems' expected program development costs, slowed its compile times and resulted in lost files, the attorney added.

Call Systems is a locally headquartered consulting/application programming firm, one of whose clients is Contact Lumber, which was also reportedly harmed by its Express and Emos performance problems.

As compensation for their alleged injuries, the two user companies sought damages covering their application development, support and maintenance costs, the last of which reportedly totaled \$500 to \$600/mo.

Three R&D Firms Seal Pact To Develop Supercomputer

MENLO PARK, Calif. — Three major research organizations have announced they will work together over the next decade to develop a supercomputer capable of performing calculations 1,000 times faster than current high-speed number crunchers from such companies as Cray Research, Inc. and Control Data Corp.

The Lawrence Livermore Laboratory, the Los Alamos National Laboratory and SRI International, Inc. have joined forces to form the Supercomputer Project Research Experiment for Access and Development (Spread). In addition to the long-term goal of creating an advanced supercomputer, Spread will put prototype experimental supercomputers said to be 100 times faster than those now available onto a network that scientists in the research field can access, according to a spokesman.

"The idea is to make the supercomputer available to the research community at large," according to Franklin Kuo, executive director of the Center for Intelligent Computer

Systems at SRI here.

The network will provide wide-band satellite service of 1.5M bit/sec to handle the high output of the supercomputers. Among the advanced computers placed on the network will be the Digital Equipment Corp. 784, which is a "four-headed VAX," according to Kuo.

The project is scheduled to be up and running by mid-1984 if funding goes well. Part of its goal is to combat the Japanese threat of technological domination, according to SRI.

"The Japanese supercomputer program is well-organized and well-funded," an SRI spokesman said. "It poses a threat to U.S. technical superiority."

Among the uses for the supercomputers under development are weather prediction and nuclear physics, but the wait for current technology is still long. "There are 60 high-speed computers currently on order from Cray and CDC," according to Jim Kloss, SRI Journal editor.

HP 3000 Family, MPE Updated

(Continued from Page 1)

Aimed at small and medium-size businesses, the Series 48 contains 4M bytes of internal memory and handles as many as 152 terminals simultaneously, 104 of which can be point-to-point. Up to 16 disk drives, storing up to 4.2G bytes of data, can be attached to the Series 48 and up to seven intelligent networking nodes.

The low-end Series 42 is being targeted at smaller businesses or as part of a distributed network in larger organizations, the company said. The system features 3M bytes of main memory, enabling it to support 92 terminals, eight disk drives holding 3.2G bytes of information and three intelligent network processors.

HP attributes all three systems' increased throughput, faster response times and ability to support more terminals to a disk cache feature and improvements incorporated into MPE-V, the latest version of its operating system.

According to a spokesman, the disk cache feature speeds throughput rates and response times by eliminating the need for data to be transferred from disk to main memory. The cache reportedly anticipates the code and data most likely to be re-

quested by applications in progress, holds it in main memory as space allows and checks to see if there are any duplications of information before going back to the disk.

MPE-V reportedly supports the concurrent running of more applications than previous versions and allows users to configure more terminals and other peripherals through the extension of its operating system tables. The system has the potential to support up to 400 sessions and 24 disk drives, according to the company.

The operating system is compatible with all systems in the HP 3000 computer line, the spokesman noted. The disk cache feature and MPE-V are also compatible with HP's recently released Series 39 system, which competes with IBM's System/34 and the just-announced System/36.

The basic Series 68 includes 3M bytes of main memory, a system console, 12 terminal ports, a 404M-byte disk and a 1,600 bit/in. tape drive. It is priced at \$245,614. The system is available in either one- or two-bay I/O configurations. The two-bay unit provides a 50% increase in overall I/O bandwidth, which improves a user's ability to access disks and increases throughput speed, a spokesman noted.

Price of the basic Series 48 is \$109,500 and consists of 2M bytes of main memory, a system console, four terminal ports, a 132M-byte disk and a 1,600 bit/in. magnetic tape drive.

The stripped-down version of the Series 42 lists for \$72,400 and contains 1M byte of internal memory, a system console, four terminal ports, a 132M-byte disk and 1,600 bit/in. magnetic tape drive.

First deliveries of all three systems are scheduled for September, the vendor said from 3000 Hanover St., Palo Alto, Calif. 94304.



The HP 3000 Series 68

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Sparks Civil Liberties Concern

Senate OKs Bill Embodying Worker ID System

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — The U.S. Senate has approved broad immigration reform legislation that, among other things, directs the president to develop a secure worker identification system, a system criticized by its opponents as a de facto national identification system.

At the heart of the ID controversy of the Immigration Reform and Control Act is the bill's provision making employers liable for hiring aliens not permitted to work in this country. Supporters of the ID provision argued employers could not be responsible for judging who is legally eligible to work unless there is an adequate identification system employers can check.

The eligibility verification provision initially would allow employers to ask for U.S. passports or a combination of documents, such as birth certificates, Social Security cards and drivers licenses. The legislation, approved by the Senate May 18 on a 76-18 vote, but still several months away from consideration by the House of Representatives, directs the president to develop, within three years of the bill's enactment, a "secure system to determine employment eligibility."

It is this mandate that has raised concerns of civil liberties advocates both in and outside Congress. They argue that any national system will be large, expensive, unreliable and so tempting to other government agencies that there will be inevitable attempts to use it for a variety of purposes unrelated to employment [CW, Aug. 30].

They compare it with Social Security numbers, once limited in use, but which now are used for numerous licensing and identification purposes.

Supporters of the immigration bill, however, scoff at that contention. The Senate Judiciary Committee issued a report on the legislation last month that said, "the committee

does not believe that the system being proposed involves any form of a step toward loss of civil liberties."

As to cost, the committee said a worker eligibility verification system utilizing employer telephone calls to a government data bank would average \$333 million per year for the first five years and about \$200 million per year thereafter. The committee argued that this cost would be more than offset by reduced government unemployment benefits since the bill would theoretically decrease the joblessness that is caused by illegal aliens taking the jobs of eligible workers.

The committee pointed to the

"specific safeguards" in the bill — such as a prohibition against using the eventual system for any other purpose or requiring the cards be carried — as minimizing "the risk of undue invasion of privacy and the risk of government abuse."

The report continued, "The committee is most emphatically not requiring or permitting the development of an 'internal passport' or 'national ID card.'"

But opponents of the measure remained unconvinced, particularly Sen. Alan Cranston (D-Calif.), who led Senate opposition to the ID provision.

During debate on the bill, Cran-

ston argued against what he called this "expensive, dangerous provision that would require every person in the U.S. to have some form of authorization by his or her government in order to work. That is a major step toward a police state," he said, adding, "there is no justification for such a drastic program."

The provision was criticized, though not so strongly, by several other legislators. Sen. Mark O. Hatfield (R-Ore.) praised the bill's safeguard language, but successfully offered an amendment that would give Congress veto power over whatever ID system is eventually recommended by the president.

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Design Meet To Hear Mark

CHICAGO — The Illinois Institute of Technology (IIT) computer design conference here June 23-25 will have Hans Mark, deputy administrator of the National Aeronautics and Space Administration (Nasa), as its keynote speaker.

Mark's speech on "Computers and the Exploration of Space" will describe the intensive application of computers to space exploration, ranging from their use in the design of spacecraft to their importance in the launch of spacecraft in space.

The conference is sponsored by IIT's Institute of Design and the School of Advanced Studies.

The conference registration fee is \$325 for the general public, \$285 for members of the National Computer Graphics Association, \$185 for college faculty and \$80 for students. More information is available from the IIT Center, Chicago, Ill. 60616.

- ☐ Enclosed is \$29.75 for each copy of *Controlling Software Projects*, by T. DeMarco.
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IBI Projects Include Cuban Packet-Switching Net

By Jake Kirchner

CW Washington Bureau

HAVANA, Cuba — With speeches and diplomatic flourish, Cuban and Spanish representatives signed an agreement here last week to develop jointly a packet-switching telecommunications network for Cuba.

The agreement marked the initiation of just one of many such international projects the Intergovernmental Bureau for Informatics (IBI) sought to promote at its gathering here for some 300 people from three dozen, primarily Third World, nations.

Another project, already under way with the coordination of the Rome-based IBI, involves Symag of Grenoble, France, which is transferring its microcomputer hardware and software technology to Madagascar. According to the plan, Madagascar, with Symag training, will develop the ability to design and produce increasingly sophisticated components of microcomputer systems, including integrated circuits and application software.

Also during the meeting here, Mexico and Algeria offered to make available their agricultural information systems and data bases to a project that IBI is developing for an agricultural system via remote satellite sensing.

One of the more controversial projects discussed here would promote use of videotex in developing nations. Daniel Delpuech, of the

French Telecommunications Planning and Development Agency Idade, told the meeting that videotex is a natural technology for those countries because virtually all have existing telephone and television networks.

Some delegates raised questions about the lack of a videotex standard and the possibility that industrialized nations will monopolize this technology. But Delpuech suggested each country can adopt "the tool and not the existing applications in the industrialized nation."

Because videotex can be implemented with relatively little user training, he added, it can immediately be useful for such purposes as government message systems and news

broadcasting. While these projects vary in locations, sponsors and context, they have in common the coordination of the IBI and the fact that they bring together vendors from developed countries and representatives of developing nations that need advanced technology.

This special informatics development program, which the IBI hopes to see grow to at least \$1 billion in projects, includes direct transfer to the recipient country of hardware and software from the vendors, who will also be required to train systems users, managers and maintenance personnel. The aim, according to the IBI, is to apply the technology to nations' developmental needs while at the same time using the projects to

promote the countries' own information industries.

Thus, the projects imply established vendors helping to create new competitors around the world. But the attendance of several dozen of these firms, mostly from Europe, at last week's meeting suggests they agree with the IBI that "all will benefit from it eventually" if new markets are opened and existing ones expanded through the program.

Because the IBI, as a multigovernmental organization, is coordinating the planning and financing as well as providing technical advice and follow-up, companies are less wary of nonpayment and political problems that might otherwise arise in dealing with developing countries.

Third World Nations Discuss Tech Crisis

(Continued from Page 1)

tries, including economic and government management, education, health and agriculture.

Unfortunately, developing nations, for a number of reasons, have been disappointingly unsuccessful in applying this technology. The IBI, which consists primarily of Third World nations and is dedicated to advancing their informatics development, cites lack of trained personnel, poor access to financial resources and "the absence of management infrastructures" as the primary reasons for their inability to make better use

of external aid in informatics.

Previous IBI gatherings have discussed the political and policy-related issues surrounding adoption of national informatics plans and questions concerning relations with the large multinational firms that supply the necessary computer and telecommunications products and services. The Havana meeting, however, was almost totally devoted to planning a number of informatics development projects bringing together some of those vendors, primarily from Europe.

Representatives of Olivetti and Sperry Italy were in attendance, along with people from large international financial institutions and individual countries. The aim of these projects, to be coordinated by the IBI, is to effect technology transfers from the developed to the developing worlds, as opposed to the mere financing of hardware and software purchases.

Of the latter approach, the IBI said in a statement released here that "the mere transposition of products designed in the industrialized countries not only fails to have a lasting positive effect, but can halt progress and even be a destabilizing factor, should they not fall in line with the functioning of the existing structures."

The hope is that if properly planned and managed, informatics development projects can be transferred to other nations once they prove successful in the initial project. They are being targeted at those sectors of the economy that will not only allow countries to increase financial development, but also allow them to develop their informatics infrastructures further at the same time. To that end, IBI is sponsoring what it hopes will grow to at least a \$1 billion program of these informatics projects.

Specific Projects

The meeting here heard discussion of a number of specific projects, ranging from development of a legal data base in Argentina, with the aid of the Italian Supreme Court and a French-assisted development project in Tunisia of Arabic language software, to a plan to tailor videotex systems to rural, underdeveloped areas of the world (story above).

Attendees, while recognizing the acute developmental problems of the Third World, expressed optimism about the prospects for informatics in their countries.

They view informatics as, in the words of one of the delegates, "the basic tool" for economic and social development today, and they expressed concern that failure to act promptly could mean eventual forfeiture of their economic, social and cultural independence in the computer age.

Although calling for "true intellectual independence" from industrialized countries, a number of delegates here suggested the possibility of informatics coexistence between the Western powers and the Third World.

For example, a French representative suggested Third World countries could, with assistance, develop indigenous hardware and software production capabilities allowing them to find a niche in certain microcomputer markets, much as many smaller firms in the industrialized nations must learn to live with the major vendors.

He warned, however, that within three years those large vendors will have appropriated to themselves most Third World markets if those nations have not moved to establish their own presence.

By and large, however, the power and influence of the IBMs, Hitachis and Olivettis of the world were recognized without rancor. Rather, those companies were seen as possible sources for international informatics development through the IBI projects.

While calls for sharing the informatics wealth have long marked Third World discussions, the Havana meeting was more devoted to finding ways to pay for what the countries here see as their fair share of that wealth and to facilitate its efficient distribution.

Because of U.S. restrictions on doing business with and traveling to Cuba, the American DP/telecommunications industry was not represented at this meeting. But according to one IBI official, the organization hopes to include U.S. firms in its informatics program through meetings that will be held in the U.S. at a later date.

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New Pillsbury Exec Tells How to Rise to Top

By Katherine Hafner
CW Staff

CHICAGO — John M. Hammitt's career as a DP manager has moved at a swift pace along a path leading straight to the top.

Currently in the top management information systems (MIS) job at Morton Thiokol, Inc., where he oversees about 450 people, the 39-year-old Hammitt will join the Pillsbury Co.'s Minneapolis office June 1 as vice-president of information management.

Hammitt's rise to the top of his field has been quick and direct, but his entrance into information systems was more circuitous. He received his bachelor's degree in chemical engineering from the Illinois Institute of Technology and his master's in business administration, with a concentration in finance and marketing, from the University of Chicago.

At age 20, Hammitt went to work for CPC International, Inc. here as a laboratory technician. He began working with computers for laboratory automation and was soon supervising the implementation of process control computers.

Although today he considers himself primarily a business manager, Hammitt attributes his success in large part to his engineering background. An advantage he holds over strictly technical people, Hammitt explained, is his ability to view computer problems from an engineer's perspective, not a programmer's.

"I look at a program in a different way," he said. "I don't see it as a mysterious job. It takes technical expertise just like the expertise involved in developing a marketing program."

"One thing I've been able to do is take a lot of the mystery out of computer programming," he said. "I was fortunate to have entered the business in the senior management level before I became too caught up in the technical side."

Morton is best known for its salt, but operates three other divisions as well: Chemical Products Division, Household Products Division and Aerospace Division.

Hammitt worked as a senior systems analyst for Morton from 1970 to 1972. As an analyst, he worked on systems to provide better information for analyzing the market and sales and developed product code information for salt and chemical products.

In 1972, he was promoted three levels to manager of corporate information systems; and in 1980 he was named director of information management, with companywide responsibility for computing, telecommunications and office systems worldwide.

In his current position, Hammitt oversees directly 100 DP individuals and about 350 Morton employees throughout the world. At Pillsbury, his immediate staff will consist of about 130 people, with 450 others scattered throughout the business.

"There are few people who make it this far as quickly as I did," Hammitt conceded. "That is, few people my age move on to a vice-president position with a \$3.8 billion company like Pillsbury."

'One thing I've been able to do is take a lot of the mystery out of computer programming. I was fortunate to have entered the business in the senior management level before I became too caught up in the technical side.'

The primary difference between his job at Morton and the Pillsbury job, Hammitt said, lies in the size of the two companies. Morton spends about \$25 million each year on computer-related equipment; Hammitt expects the acquisitions budget at Pillsbury to be twice as much.

As for what he plans to do when he takes the reins at Pillsbury next month, Hammitt said he will spend three to six months acquainting himself with the company in an effort to understand the business.

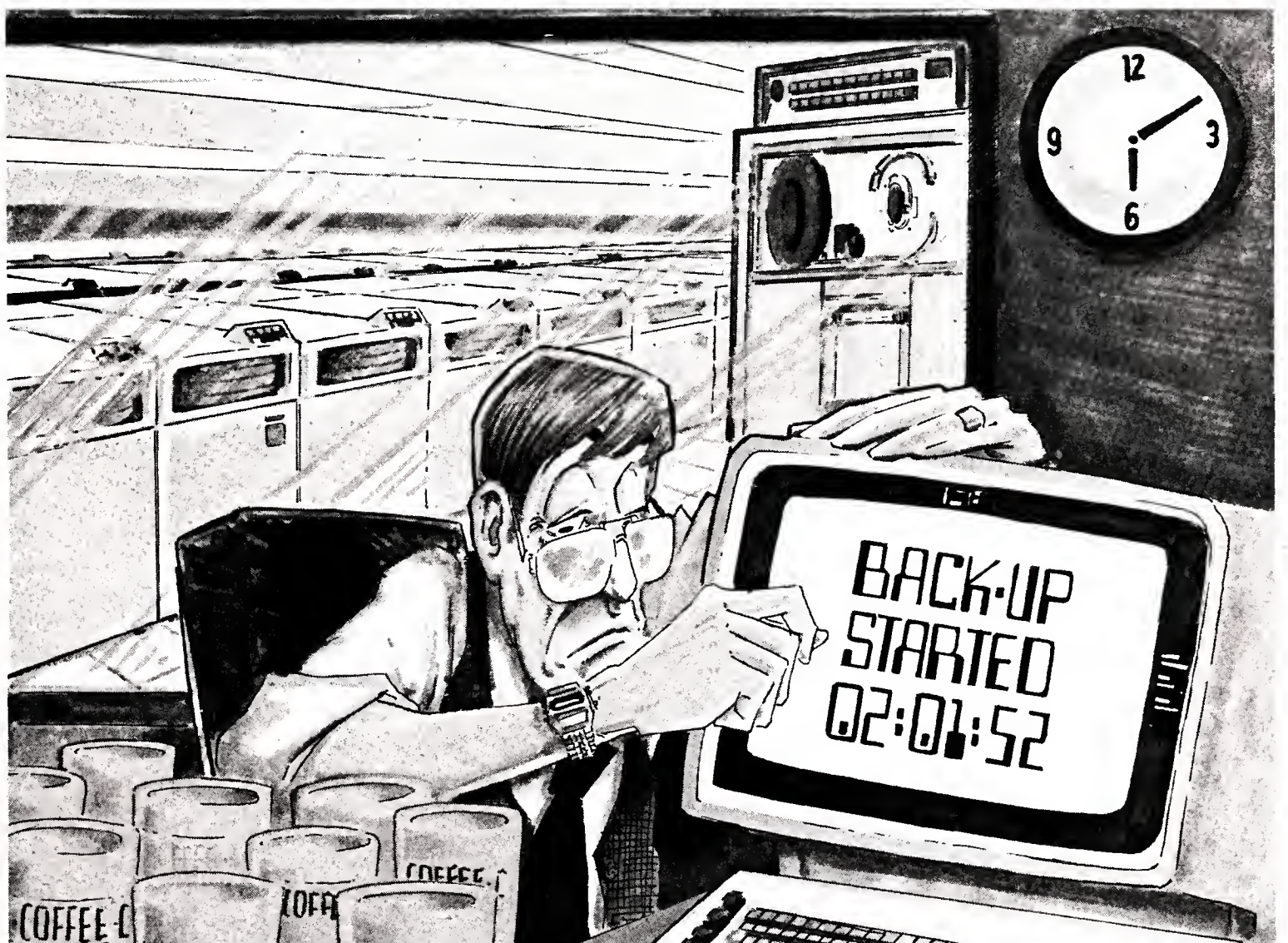
"First, I'll have to learn the food and restaurant businesses. Then I will have to learn the people," Hammitt said. "After all, the people and the culture of the business are what make it successful."

Perhaps most importantly, Hammitt added, he will examine closely Pillsbury's current information systems.

"I'll look at what they've already got in place," he said. "That's essentially the foundation that any future change has to be built from."



John M. Hammitt



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Datacomm Briefs

Court Upholds FCC On AT&T Return Rate

By Phil Hirsch

CW Washington Bureau

WASHINGTON, D.C. — Rejecting arguments made by the Department of Justice, the U.S. Court of Appeals for the District of Columbia has upheld a 1981 Federal Communications Commission decision allowing AT&T a 12.75% rate of return.

The commission's explanation of how it arrived at that figure was "somewhat cryptic," the appeals court said, but it "clearly" met a standard of being "reasonably justified."

AT&T to Cut Rates 40% On Wideband Service

WASHINGTON, D.C. — A 40% reduction in AT&T's wideband data transmission rates will become effective July 2 if there are no objections from the Federal Communications Commission (FCC).

The reduced rates would allow users of AT&T's High Speed Switched Digital Service (HSSDS) to transmit at a minimum rate of 1.5M bit/sec over a single channel. Currently, the minimum is 3M bit/sec over two channels.

HSSDS is designed primarily for video teleconferencing and bulk data transfer applications, said a phone company spokesman, who added that the lower speeds and charges reflect recent improvements in video teleconferencing systems which allow a 3M bit/sec signal to be compressed into 1.5M bit/sec.

According to AT&T, the single-channel HSSDS rate for a one-hour transmission between New York and Washington, D.C., would be \$380. By comparison, the present rate is \$600. Between New York and San Francisco, the two-channel rate is \$1,640/hour. If the tariff modification is implemented, an hour of transmission between the same two points would

cost \$1,000.

HSSDS is now available in 12 U.S. cities, but AT&T said that by the end of this year, the service will be extended to a total of 31 cities.

Cable Exec Warns House Against Regulation

WASHINGTON, D.C. — "You don't build the same kind of cage for a canary that you build for a gorilla," Thomas Wheeler told the House of Representatives' Telecommunications Subcommittee last week.

Wheeler, president of the National Cable Television Association (NCTA), was alluding to AT&T's contention that cable TV networks offering private-line communications services should be subject to the same regulatory restraints imposed on telephone companies.

"AT&T and the Bell operating companies currently have nearly 100% of the wire-line data transmission market," Wheeler contended, adding that "only seven" of the nearly 5,000 cable systems now operating in the U.S. offer "any form of data transmission, and some of these are so primitive they [hardly] compete with the telephone company."

The subcommittee is considering the need for legislation to regulate cable TV. Last week's hearing was the first of a series aimed at soliciting the views of interested parties. The next hearing, scheduled for early June, will include telephone company representatives.

Senate to Vote June 13 On Cable Net Regulation

WASHINGTON, D.C. — A bill that allows cable TV networks to provide private-line services free of regulation will be considered by the entire Senate membership June 13. The legislation, S. 66, is strongly opposed by AT&T and state public utilities commissions.

When the bill reaches the Senate floor, an amendment will be introduced by the sponsors of S. 66, who include key members of the Commerce Committee. The amendment provides for regulation of basic telephone service if provided by cable TV networks; requires network operators to file "information tariffs" with their state public utility commissions for all other services that, if offered by telephone companies, would be regulated; and encourages the commissions to deregulate the latter as soon as they become competitive.

AT&T and state regulators, however, have already told the amendment's authors that it does not go far enough.

Point-to-Point Option Planned for SBS Net

MCLEAN, Va. — Satellite Business Systems (SBS) wants to add a point-to-point option to its existing switched Communications Network Service (CNS), beginning July 14.

In a recent tariff submitted to the Federal Communications Commission, the company said each of the new "D1 Connection Arrangements" would provide CNS customers with a 1.5M bit/sec, full-duplex circuit between any two designated earth stations for \$26,000/mo. Customers would be free to subdivide their channels but would have to provide their own multiplexing equipment.

The new option, according to SBS, could provide "medium- to long-distance" wideband communications service at savings of "up to 50% over comparable competitive offerings." Digital voice, computer-to-computer bulk data transfers and video teleconferencing are among the expected uses.

New Company Eyes Satellite Service

LOS ANGELES — Low-cost, two-way satellite-based communications

service, delivered through small-diameter rooftop antennae, is promised by National Exchange, Inc., a new company headquartered here.

Although the company is still looking for financing, its principals include two well-known telecommunications industry figures — Clay Whitehead, former president of Hughes Communications, Inc. and telecommunications adviser to former President Nixon, and Robert F. LaBlanc, former vice-chairman of Continental Telephone Co.

The National Exchange satellite system would provide 96 spot beams that would cover the nation's major metropolitan areas and provide enough power to permit use of "very small earth-station antennas" as well as low-power transmitters, the application said.

National Exchange plans to serve private users as well as common carriers.

Switched Voice Service To be Offered by EMX

ROCKVILLE, MD. — EMX Telecom, a new resale communications carrier that plans to begin offering switched services by the middle of next year, said it will provide users with savings of 20% to 30%. The company is a partnership of American Satellite Corp. (ASC), a major domestic U.S. satellite communications carrier, and Mitel Corp., a Canadian PBX manufacturer.

EMX initially will offer switched voice service among seven earth stations located near New York City, Chicago, Dallas, Atlanta, Los Angeles, San Francisco, and Denver. However, digital interfaces are planned, and the company expects to provide store/forward voice mail, facsimile transfer, and compressed video teleconferencing services.

The planned data transmission speeds are 9,600 bit/sec, and 56K bit/sec, plus and 1.544M bit/sec.

Packwood Previews Bill

(Continued from Page 1)

plained, adding that "we have to make sure [these companies] pay their proportionate share of the local subsidy."

Packwood, who is the Senate's major communications policymaker, stressed that although he believes the local network subsidy needs to be increased, his main purpose in introducing the new bill is to spark congressional discussion. The matter is one that Congress — not the FCC or the courts — should decide, he added.

Before Packwood's bill is formally introduced in the Senate at the end of next month, according to one of Packwood's aides, it will be sent to other senators for their comments.

According to a committee press release, objectives of Packwood's bill include:

- Establishing a "national policy guaranteeing universal telephone service by ensuring that increases in residential telephone rates are reasonable."

- Ensuring that "any carrier, private system or any other entity that connects directly or indirectly to any local telephone exchange contributes to the maintenance of the universal telephone network."

- Encouraging states to ensure that telephone companies make basic telephone service available at a minimal rate to all residential customers.

- Discouraging conflicting federal/state regulatory policies concerning intrastate and interstate long-distance telephone service.

Packwood said he is starting the legislative process now because he is afraid that pending rate increases will force residential and rural telephone users, particularly senior citizens and the poor, to "give up their phones altogether." In Oregon, he noted, Pacific Northwest Bell's basic residential telephone rates have risen from \$8.95 to \$13.95/mo since last June; nationally, "AT&T has requests pending for about \$4 billion in increases, \$3.5 billion of which would be borne by residential customers."

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Decision to Scrap Jupiter Disappoints Users

By Ed Scannell
CW Staff

ST. LOUIS — Despite Digital Equipment Corp.'s efforts to convince its mainframe customers of the advantages of rerouting their upgrade paths to its VAX-11 supermini line, most attendees of the Decus users group meeting here last week were disappointed the company would not be producing sequels to the Decsystem-10 and 20.

Predictably, users running out of CPU horsepower and counting on the delivery of the Jupiter products were skeptical about DEC's proposed solution to their upgrade problems, while those not planning any kind of upgrade in the near future understood and saw some merit in the vendor's strategy.

One user whose systems are fast approaching their processing limits and who was depending on the Jupiter upgrades was Randall Bennett, director of information systems for Edgcomb Steel of New England. "We have been waiting for Jupiter for the last couple of years," Bennett said, and "have made some short-term upgrades which were in line with waiting for the Jupiter. And now that it is not going to be available, we are really going to have to go back and re-think where we are going."

Edgcomb Steel considered DEC's

alternative of networking its Decsystem-1090 and 2020 systems into the VAX series "almost two years ago," while it was waiting for the Jupiter systems, but Bennett admitted the VAX network approach was not the company's first choice. "However, we will probably take another look at it now," he added.

Another user hoping to take advantage of the Jupiter upgrades' superior processing power was Rod Burke, director of computer services for Prycor Corp. Burke said DEC told him a year-and-a-half ago the Jupiter system would be available at about this time. "We probably would have ordered one, and it would have been my salvation by the time it would have come in," he said.

Burke does not see DEC's networking alternative as a solution to his problems because "you can't do the same things on the VAX lines that you can on the 20 line." Burke will probably install another Decsystem-2040 or 2060, which will allow him to have "fewer users on each system, but more users in total. We should also be able to get the same response time or better."

The major anxiety of Neal Stratton, manager of systems facilities for the Denver-based Energy Enterprises, centers on what DEC plans to do with the Tops-20 operating system. "We support a variety of clients, and if the operating system is going away over a period of time, we are looking at rewriting all the software

we have. There is no software path we can take," he explained.

Norbert Kubilus, vice-president in charge of development and operations for Rapidata, Inc. and who also served as a representative from the user community helping DEC design the Jupiter systems, said he was "personally disappointed" the company would not produce the systems. From a business standpoint, he did not see the systems as a necessity.

"Jupiter was both a processor architecture and an overall system architecture. Basically what DEC has announced is the discontinuation of the CPU, but not the concept," he noted. "Originally, Jupiter was just one of the pieces of the distributed processing environment."

DEC Scrubs Jupiter Project

(Continued from Page 1)

pany will continue development of hardware, software and communications enhancements for their products, most notably enhancements for the processors' Tops-10 and Tops-20 operating systems and a series of mass storage devices. However, there will be no further systems in the Decsystem line.

According to Rose Ann Giordano, manager of DEC's Large Computer Group, the company will put its "[Computer Interconnect] and [high-speed channel interface] and Ethernet connections on both Tops-10 and Tops-20." The company will also provide Decsystem-10 and 20 users with "integration tools" that will allow their existing software to run on the VAX-11 superminis, she added.

Giordano stressed that these packages are integration and not conversion packages. "We are not asking [users] to convert — we don't believe that most people will convert. Our strategy is to integrate Tops-10 and Tops-20 into our overall corporate information architecture," she explained. She said DEC is committed to "doing some incremental software to make that integration more graceful. In other words, we want everything from our personal computers to our mainframes to be able to move data back and forth in an easy fashion. Current applications on the [Decsystem-10 and 20] are viable."

DEC will ask its users over the next two months to help the company "prioritize" what they think are the most useful integration tools. "We should have an agreement with our users on what they think are the best tools by August first."

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Student Opinion Form

Educational Services/Quality Assurance Program

This Student Opinion Form is designed to help Digital assure the quality and usefulness of its training courses. Please respond carefully and objectively as indicated below.

- Complete the course information above. Do not write your name anywhere on this sheet.
- The other side of this sheet consists of two sections: **Background Information** and **Evaluation of Course**. In the **Evaluation of Course** section you will find a list of numbered statements that may or may not describe your opinions about this course. Please indicate whether you agree or disagree with each statement by selecting the appropriate lettered box from the following choices:

SA = Strongly Agree A = Agree U = Uncertain D = Disagree SD = Strongly Disagree NA = Not Applicable

PLEASE READ DIRECTIONS ON THE OTHER SIDE. SELECT THE ONE BEST ANSWER.

BACKGROUND INFORMATION

- What is your relationship with Digital? (a) customer (b) employee (c) other
- What is your primary job area? (a) hardware (b) software (c) management (d) education (e) other
- How many years of experience have you had with computers? (a) less than 1 (b) 1-3 (c) 4-6 (d) 7-9 (e) 10 or more
- Did you meet all the stated prerequisites? (a) Yes (b) No
- Why did you take this course? (a) general interest (b) required for current job (c) required for new job (d) to help get new position
- What is your native language? (a) English (b) Spanish (c) French (d) German (e) Italian (f) Japanese (g) Chinese (h) Dutch (i) Swedish (j) Other

EVALUATION OF COURSE

SA=Strongly Agree A=Agree U=Uncertain D=Disagree SD=Strongly Disagree NA=Not Applicable

Statement	SA	A	U	D	SD	NA
1. I learned a lot of valuable skills and information.						
2. The course content met my expectations.						
3. The course was well organized.						
4. The course materials were easy to understand.						
5. I needed all the information contained in the course materials.						
6. The course emphasized the real job.						
7. My test scores accurately reflected what I learned.						
8. The lab exercises were useful for learning.						
9. The instructor was very knowledgeable in the subject.						
10. The instructor answered difficult questions easily.						
11. The instructor's presentations were easy to understand.						
12. The instructor made the course interesting.						
13. The instructor managed class discussions well.						
14. The instructor took the time to answer questions.						
15. The instructor was patient and helpful.						
16. The instructor emphasized the objectives of the course.						
17. The instructor made effective use of the available time.						
18. The training center provided all the services I needed.						
19. My workspace in the classroom was comfortable.						
20. The classroom was well laid out.						
21. The lab was functionally laid out.						
22. The lab time was adequate for this course.						
23. My housing was satisfactory.						
24. Please indicate your overall impression of this training experience.						

E=Excellent VG=Very Good G=Good F=Fair P=Poor

Claims Subscribers Not to Be Affected

AT&T to Greene: Loop Access Rates Won't Rise

By Phil Hirsch

CW Washington Bureau

WASHINGTON, D.C. — Although it will cost \$300 million over the next five years to separate the local and long-distance facilities of the Bell network, subscriber loop access charges will not be increased.

So said AT&T last week in a statement submitted to federal District Court Judge Harold Greene. Greene is considering the AT&T-developed reorganization plan that would carry out the U.S. vs. AT&T antitrust settlement negotiated last year.

Earlier this month, Greene raised questions about a number of costs associated with the reorganization and

requested comments from AT&T and others. He hinted that he would alter the reorganization plan if it resulted in subscribers paying higher rates.

A major assumption of the settlement, Greene said, is that increasing competition in the telecommunications marketplace should not increase local telephone rates.

None of the reconfiguration costs "involve subscriber loops," AT&T explained last week, so "none of the cost will be reflected in the [Federal Communications Commission (FCC)-prescribed] access line charge. Rather, the costs all relate to traffic-sensitive plant which will, in accordance with the FCC's access charge

decision, be recovered entirely in Bell operating company access charges to interexchange carriers."

An AT&T spokesman admitted, however, that as these charges are passed on by the interexchange carriers to their customers, telephone network subscribers will pay for reconfiguring the network.

Greene has scheduled a hearing for June 2, at which time he plans to discuss this and other questions with representatives of the phone company, the Bell operating companies, the FCC, the Justice Department, specialized carriers and consumer groups.

Another controversial matter concerns the proposed central staff orga-

nization that would perform a number of technical and marketing functions for the divested Bell operating companies, besides acting as their point of contact with the Defense Department.

Greene said he wants to know whether the organization's technical functions could give Western Electric an unfair advantage and whether its 8,800 employee staff could raise local telephone rates unnecessarily.

He has also questioned AT&T's plan for dividing up the No. 4 electronic switching systems that comprise the newest, most sophisticated central office switches in the Bell System. By next year, 91 No. 4 electronic switching systems are scheduled to be in operation, but the divested Bell operating companies will get only 10.

Deltak Offers Three Courses For IBM Users

NAPERVILLE, Ill. — Deltak, Inc. has announced three computer-based training courses for users of IBM's MVS/SP, CICS/VS and IMS/VS operating environments. Each course combines text, video and computer-based instructional material.

"MVS/SP Job Control Language (Part 1)" was designed for data processing professionals, including programmers, analysts, operators and systems support personnel who use IBM's JCL. The course was co-developed by Duotech, Inc. and is applicable to installations using IBM's MVS and MVS/SP operating systems using IBM's JES2 and JES3. The series instructs students in coding JCL procedures. The course assumes students have a basic understanding of data processing concepts. It also requires access to an Apple Computer, Inc. Apple II+ processor.

"CICS/VS Command Level: Applications Development" was designed for applications programmers and programmer analysts. The course builds on a student's knowledge and ability to use command-level facilities of CICS/VS. The package was designed for use with IBM's Interactive Instructional System or Goal Systems International, Inc. computer-based training systems. All commands, examples and exercises are presented in three languages: Cobol, PL/1 and assembly.

"IMS/VS Master Terminal Operations" covers the concepts of IBM's IMS data base management system in a data communications environment. The four-course series is aimed at lead operators in an MVS environment who will soon be working as master terminal operators. The series assumes two to three years' experience as a lead operator.

The courses have a monthly leasing fee of \$50 to \$125 per course, depending on volume.

The courses can be purchased for \$1,750 per course, Deltak said from East/West Technological Center, 1751 W. Diehl Road, Naperville, Ill. 60566.

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digital

U.S. to Increase Talks on Communications

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — The U.S. will increase bilateral talks with other nations to identify common goals and interests in international telecommunications and information, Ambassador-designate Diana Lady Dougan said recently.

Dougan, recently appointed State Department coordinator of international communications and information policy, noted the increasing number of international organizations, including the United Nations and the Organization for Economic Cooperation and Development, which are active in the telecommunications and information policy area. While the U.S. will continue to work within those organizations, she said, the government will also pursue its goals on a country-by-country basis.

Dougan discussed her new office's plans and goals at a recent conference on international telecommunications policy cosponsored here by the Federal Communications Bar Association and the International Law Institute of Georgetown University.

Also addressing the conference was Riley Temple, staff counsel of the Senate Communications Subcommittee, who said S. 999 — the pending legislation on international communications — is heading for full Senate approval within the next few months [CW, May 16].

The State Department is expected to comment on that legislation soon,

but department officials have already said they believe Dougan, as primary administration spokeswoman for international telecommunications, has adequate resources and authority to handle the job the bill would place within the White House.

Past Efforts Not Sufficient

Addressing the issue of often-maligned previous government organization in this area, Dougan told the May 12 conference that, while "not a total condemnation of what has been done in the past," government efforts have not been sufficient for the task.

Concerning this organizational question, Dougan said, "We've had a lot of focus on form and procedure." Now what is needed, she added, is more concentration on the substance of government activity in this international arena.

She did comment, however, that her office hopes to make more sophisticated use of telecommunications in its work as chair for the 14-agency group that handles international telecommunications and information. She added that the State Department is considering the development of a data base on foreign countries' laws and regulations and their interrelations to help the U.S. in its negotiations.

Dougan also said that the government needs to identify the more important issues quickly and produce

"a clearer articulation of U.S. policy in this area and of our policy goals and objectives." In general, she said, the U.S. goal is to impress on other nations the value of this country's procompetitive telecommunications policy.

She also cited the need for long-term planning of U.S. actions in pursuit of that goal. "We can't just look to tomorrow," she said, decrying the habit of living from one international conference to the next and "strapping a fire extinguisher on our backs" whenever U.S. interests are challenged from abroad.

Dougan then discussed five areas her office will be examining in the near future:

- The impact of deregulation on U.S. foreign policy. She noted the Federal Communications Commission has recently undertaken "a far-reaching series of deregulatory activities," whose effects "go far beyond our borders" and which, she said, require more executive branch attention.

- Global communications services. She gave as an example for this category the blurring lines between domestic and regional satellite services.

- Transborder data flow. "Data flows, free trade and technology are all starting to merge," she said.

- International conferences and forums. Discussing bilateral forums, Dougan said, "more of that will be in order and will be very effective" in

identifying ways of working with individual countries in ways that complement U.S. representation at multilateral conferences.

- Research and development. She said R&D is always "popular rhetorically but ends up getting short shrift" in the government. Besides identifying possible long-term U.S. strategies and goals in R&D, Dougan said the U.S. must find ways "to show the positive effects of telecommunications and free flow of information" to persuade developing countries of the "positive effects of technology."

Microware Meet Set for Aug. 12

DES MOINES, Iowa — The 2nd Microware Users Seminar sponsored by Microware Systems Corp. will be held Aug. 12-15 at the Marriott Hotel here.

The seminar will feature panel sessions covering the technical aspects of design and use of Microware software. The panel sessions will include the software authors as well as a preview of the company's Motorola, Inc. 68000 software development tools.

Cost of the seminar is \$100 per person, from Microware Systems, through P.O. Box 4865, Des Moines, Iowa 50304.

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Conflicting Reports Given

Panel Hears Testimony on Effects of Automation

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — A congressional subcommittee studying long-term U.S. employment prospects recently heard testimony painting a bleak picture of chronic unemployment, reduced job opportunities, an increasingly unskilled work force and a growing need for constant government-supported training and retraining programs.

The cause of this dreary outlook: automation. As part of its study, the House Small Business Subcommittee on General Oversight and the Economy spent two days looking into the effects of robots and other forms of automation, such as computer-aided manufacturing and design, on small businesses and their workers.

While witnesses praised automation's enhancement of productivity, efficiency and profitability, the panel also was warned of its negative impact as, in the words of Subcommittee Chairman Rep. Berkley Bedell (D-Iowa), "the country moves seemingly inexorably from a manufacturing or industrial economy toward an informational society with increasing use of technology."

"Large-scale dislocation of labor may occur, new skills and knowledge requirements may arise and working times and styles may be altered," a subcommittee staff analysis of the issue said.

The analysis continued: "Forceful demands for training and retraining in computers and automation, by workers and managers alike, may strain the limited resources of small businesses, as could the insistence upon natural attrition rather than layoffs, furloughing employees on a rotating basis, instituting part-time work and job sharing programs, providing for early retirements and developing new jobs for displaced workers."

Federal Involvement

The paper suggested the federal government may have to become involved with business, labor and local government entities in remedying this situation. But it warned that "there is a question as to how effective such assistance would be for unskilled and semi skilled labor and whether there would be other types of jobs available to them ... even if they were retrained."

Discussing the growth of U.S. industry's use of robots, Walter Weisel, president of the Robot Institute of America, told the subcommittee there were about 5,000 industrial robots in the U.S. in 1980.

That figure could rise to between 80,000 and 100,000 in 1990, given rapid economic recovery in the next year, he said.

In the long term, that figure could reach 500,000 robots by the year

2000, according to Ted Gordon, president of The Futures Group, a Glastonbury, Conn., long-range planning consulting firm. Whereas Weisel said installation of each robot leads to the loss of less than one job, Gordon said by the end of the century, the half-million robots will have displaced five workers each, representing 1.9% of the work force expected at that time.

In the near term, testimony from H. Allan Hunt, acting research manager, W. E. Upjohn Institute for Employment Research, Kalamazoo, Mich., indicated that robots will eliminate between 100,000 and 200,000 jobs by 1990 while creating 32,000 to 64,000 new jobs. Those new jobs, he said, would primarily be in robot manufacturing, direct suppliers to robot manufacturers, robot systems engineering and corporate robot users.

Weisel argued that most robots in use today are in "hostile" work environments and thus benefit the work force in general, and are often used to replace other existing, but aging, forms of automation. While not disputing claims of the benefits of automation, Leslie Lobel, legislative representative of the Communications Workers of America (CWA) — a group active in the issue of automation and employment — countered there is an extensive "debit column" to increasing automation.

Lobel said automation is leading to a general de-skilling of large segments of the work force, who "lose out on all the benefits of the new technology" because of the growing gulf between unskilled labor and management. "What happens to the skilled union member?" Lobel asked. "His or her job is continually downgraded as new technology is used, until he or she becomes a virtual automaton."

According to the CWA representative, automation not only replaces workers but allows management to increase its control of the work force through computer-programmed monitoring and pacing techniques. This, in turn, Lobel said, can lead to reduced pay levels for skilled workers.

Lobel said that at AT&T such reductions have already taken place, with Bell System central office technicians recently having to settle for a pay scale lowered to 80% of previous levels after the introduction of computerized testing equipment.

"Some 6,000 CWA members today are earning significantly less than they were four years ago, a direct result of new technology," Lobel said.

According to Lobel, a recent CWA study found "the manufacturing wage of a high-tech worker pays 25 cents per hour less than the average manufacturing wage across Massachusetts."

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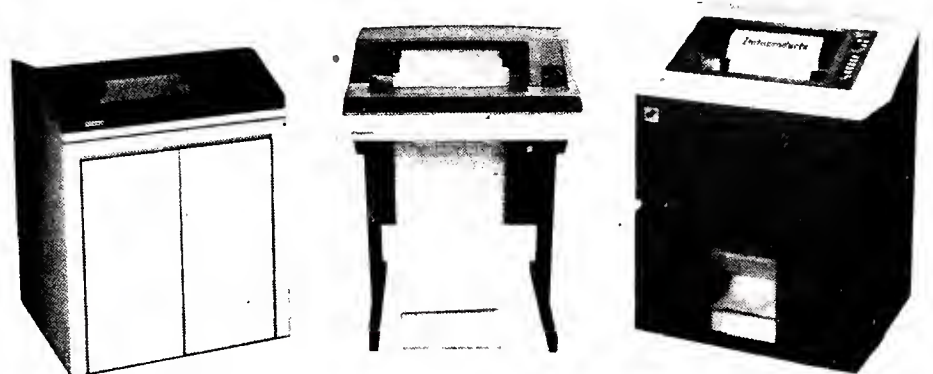
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Contributing \$32 Million Over Three Years Canada to Fund Micro Development in Schools

By Paul Gillin
CW Staff

TORONTO — In a joint effort that the government hopes will be a shot in the arm for both Canadian education and the microelectronics industry, two government agencies have announced a project to fund development of a sophisticated new microcomputer and software for use in the Ontario school systems. The government will contribute \$32 million to the project over the next three years.

The Computers in Education project, funded by the Ontario Board of Industrial Leadership and Development in cooperation with the Ontario

Ministry of Education, will provide \$10 million through 1984 for the development and purchase of 16- and 32-bit microcomputers for Ontario's 4,500 schools. The plan also provides up to \$22 million through 1986 for the development of educational software, or courseware. Installation in Ontario schools will begin in January, according to the ministry.

The announcement, however, has been greeted with skepticism by some Ontario educators who believe that the delivery dates it sets forth are overly optimistic. Critics also say the hardware specifications proposed by the ministry contain short-

comings that, for example, would require \$21,000 worth of equipment to support six elementary school students (story on Page 15).

Ten-Year Functional Life

The planned microcomputers will have a 10-year functional life, according to the ministry. They will be configurable in a local-area network and will run Quantum Software Systems, Inc.'s Qnx, a version of Unix operating system with programming languages including University of Waterloo's Microbasic and Micropascal and Logo. The micros will eventually support a user interface similar to Apple Computer, Inc.'s Lisa, ac-

cording to the ministry guidelines.

The project also calls for the government to provide \$5 million to private industry to develop 57 sample models of courseware that will be available by the end of 1984. The ministry is also seeking bids from other vendors to write software for the new machines.

Rather than rallying around one of the machines currently in use in the schools, most of which are made by Apple and Commodore Business Machines, Inc., the ministry has promoted the education project with an eye toward Canadian business. The hardware is being developed by Canadian Educational Microprocessor Corp. (Cemcorp), a consortium of three companies controlled by Meridian Technologies, Inc. A Cemcorp spokesman said that a 16-bit version will be shipped next January with a 32-bit machine available by the fall of 1984.

'Significant Steering Effect'

Although Meridian has no desktop computer on the market, the company has agreed to the government's specifications to build a machine that "will have a significant steering effect on the development of computer use in education."

Acknowledging that development costs will greatly exceed the \$2 million provided by the government, George Gondos, software coordinator for Cemcorp, said the company hopes to take a lead in the educational hardware market. "One of the reasons I feel there isn't much good educational software in North America is because of the kinds of hardware that's available to run it on," Gondos said. "When you're actually trying to use the machine to teach something other than computer literacy, you're going to need more power and better graphics and user interfaces than are currently available."

A ministry spokesman agreed, calling the Ontario project "a major government initiative to try to stimulate the software industry."

"It's an intellectually intensive industry that we can perhaps capitalize on," said Tim Crawford of the ministry's Computers in Education project.

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Decus to Hold June Symposium

OTTAWA — The Digital Equipment Computer Users Society (Decus) will hold its 16th Annual National Decus Symposium here June 21-24. Operating concurrently will be a DEC and DEC-compatible hardware and software trade fair, Dec-faire-83.

Preregistration for the symposium costs \$200; the cost at the door is \$220; the one-day walk-in fee is \$100; and the fee for students is \$75. Admission to Dec-faire will be free to all DEC users.

More information is available from show managers Laing & Laing, 145 Bradford St., Ottawa, Ontario, Canada K2B 5Y9.

Some Fear Canadian Plan to Delay Spread of Micros

TORONTO — Some educators here are highly skeptical about a Canadian government project that would invest money in the development of microcomputers and software for use in Ontario's school system.

Basically, they say that the project, which may not be viable for the next couple of years, will further delay the spread of micros in schools as educators wait for the government's system to materialize and will threaten the future of the school system's current base of 8-bit computers.

In announcing the project in March, the Ministries of Education and Industry and Trade urged school boards not to "overinvest in the current generation of 8-bit microcomputers" and advised acquisition of those products "in limited quantities" in the future.

In response to the announcement, critics say, many smaller school districts have scrapped or pared plans to buy micros in anticipation of the educational supermachine.

"The fact that statements have been made that we should stop buying and wait is having a major effect on the impetus of computerization right now," Kerry Chalmers of the Carleton Board of Education said. "The teachers are ready to go. If we suddenly say, 'Sorry, we're not buying anything for the next two years,' we're a little afraid of the shock effect that's going to have and what it's going to take to get that impetus go-

ing again," Chalmers said.

Critics are concerned that the computers will not be compatible with any of the more than 10,000 micros already in use in Ontario schools.

They also argue that by building the hardware from scratch, the ministry has restricted itself to a small body of software that will not be available for at least a year after the hardware is delivered.

Epson Commissions Limo for Exec Travel

BEVERLY HILLS, Calif. — For the busy executive who just cannot drag himself away from his terminal, Epson America, Inc. has developed a not-so-humble solution.

The manufacturer of microcomputers and printers recently commissioned Lanmark Limousine, a custom car company based here, to build an

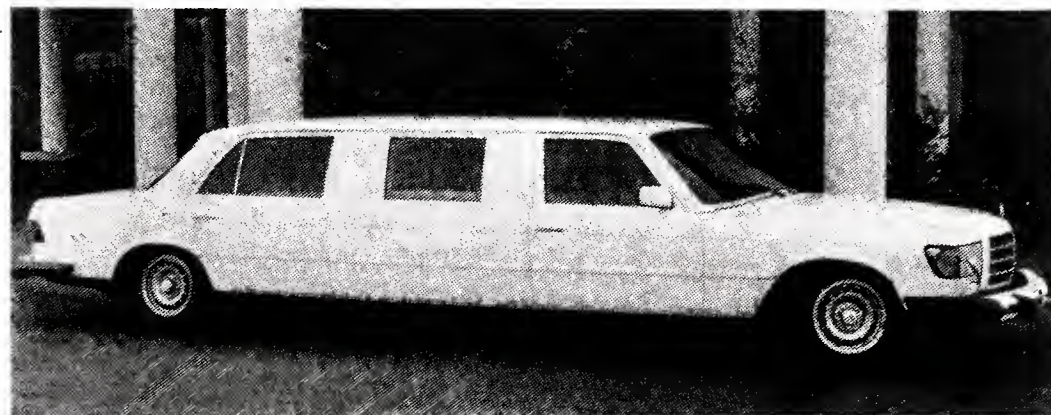
office on wheels — a little something to get you from one place to another.

Contending that the average corporate executive can waste about 40 hours a month traveling by car, the firm commissioned industrial designer Mario Zamparelli to develop the interior of the Mercedes Benz 450 SEL.

It could end up being a piece of hardware with very little software support," according to Gerry Vullings, consultant for computer education at the Ottawa Board of Education.

"I feel that, if anything, the announcement at this time has delayed the natural evolution of computer education," he said.

But other educators do not interpret the ministry's guidelines as a directive not to buy. "It was stated that school boards should continue to support the [computer planning] initiatives already in place," Jo Ann Wilton, computer consultant to the Peel Board of Education, said. "The only boards that sealed off their buying were those that probably didn't have any initiative in place. It makes good sense for them to sit back and do some planning for a year, anyway."



Epson's 'Limo of the Future'

The Bohle Co.

Epson said the car was cut in half and extended 52 inches. In that extra space, an Epson QX-10 microcomputer, an Epson HX-20 portable briefcase microcomputer, a printer, a 5-in. TV set with video cassette recorder, a telephone and a bar were installed.

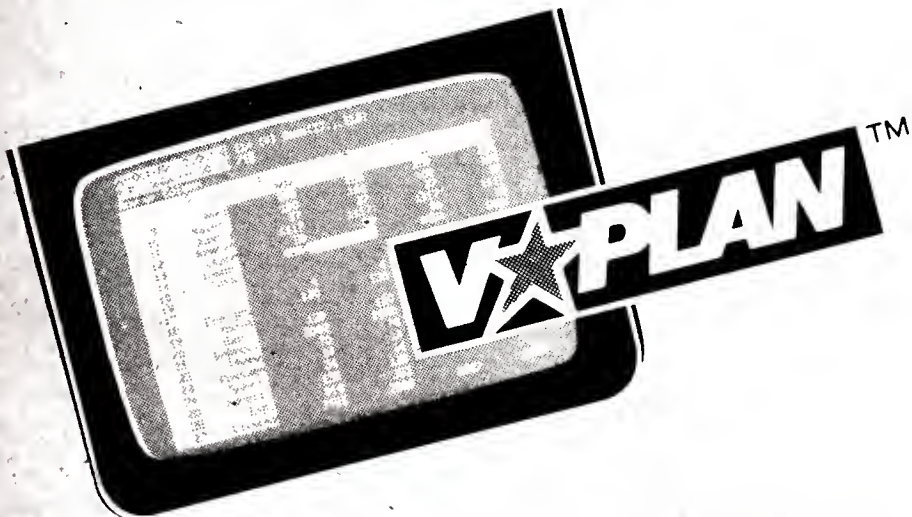
Working on Wheels

Epson said the limousine has enough electronic gadgetry to allow the executive to send and receive messages from his office, receive stock reports and do research.

If that is not enough, since feverish work in heavy traffic could ruffle an executive's appearance, the limousine is also equipped with various grooming devices, such as an electric clothes steamer, manicure set, nail dryer and shaver.

The car, which reportedly costs about \$150,000, is currently on tour throughout various cities in the U.S.

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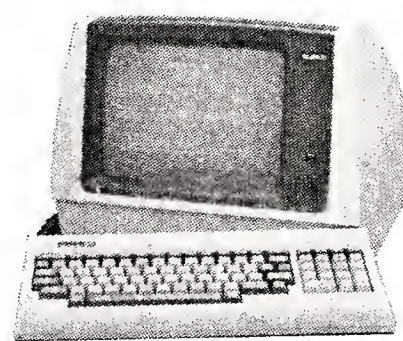
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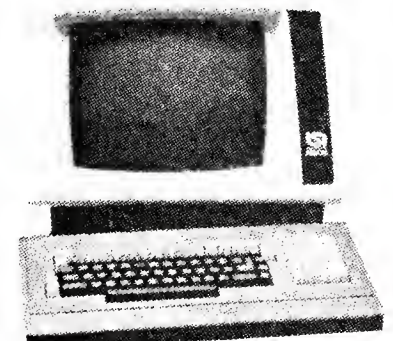
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To Monitor Aircraft Separation

NTSB Asks FAA to Expand ATC Safety Plan

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — The National Transportation Safety Board (NTSB) has urged the Federal Aviation Administration (FAA) to expand plans to reprogram air traffic control (ATC) software to monitor aircraft separation procedures.

As part of a multiphase ATC safety enhancement program, the FAA announced in March that it will reprogram computers at its 20 en route control centers to identify instances of failure to keep aircraft properly separated. Separation criteria are five miles en route and three miles in airport terminal areas [CW, April 4].

NTSB applauded that move, but noted that reprogramming will take months — if not years — to complete and will not include ATC operations at airport terminals. It is among aircraft under control from these terminals, the agency said, where most instances of controller errors and pilot deviations from separation procedures occur.

The recommendation to expand this program was contained in a lengthy study of ATC safety the NTSB conducted from August through December 1982 and released May 19. The study was undertaken to evaluate ATC operations and facilities subsequent to the board's last in-

vestigation, which was performed shortly after the October 1981 firing of 11,400 professional air traffic controllers for striking illegally.

In its new report, the board told the FAA that "based strictly on the absence since the strike of a significant number of accidents attributed to ATC factors, the ATC system has been operated safely. However, the board identified several specific safety areas of concern which indicate that the margin of safety is less than the safety board believes to be desirable.

"The matter of most concern is that our investigative findings show that there has been incomplete re-

porting of operational errors and deviations, pilot deviations and new mid-air collisions," the board continued. Among corrective actions recommended was development of "a permanent program . . . written into each radar computer to detect and flag every possible occurrence [of error deviation] based on predetermined separation criteria."

The recommendation to expand the FAA computer programming project was one of a series covering the entire range of ATC operations. The report also expressed concern that FAA efforts to reconfigure ATC sectors have caused system stress, including an instance in Atlanta in which extremely heavy demands on the computer, which generates weather reports, necessitated a system shutdown. Similar problems were found in Washington, D.C.

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Hot Line Created For CRT Users To Air Concerns

BOSTON — CRT operators throughout the country who have questions about the psychological or physiological effects of CRT use or who want to air their views now have a hot-line number to call for information.

The hot line was created earlier this month shortly after the introduction in the Massachusetts legislature of a bill regulating the implementation of CRTs in the work place. It is planned to work in conjunction with a massive national campaign undertaken by 9 to 5, a national association of clerical workers, calling for education, research and user protections.

"There are surprisingly few means of educating the millions of VDT operators about the health risks involved in VDT use," Janice Blood, a spokeswoman for 9 to 5, said. "The hot line will serve to share information about what is known about health hazards connected to VDTs and to act as a kind of central clearinghouse."

The hot line is staffed from 9 a.m. to 5 p.m., Monday through Friday. The number is 800-521-VDTs; in Ohio only, it is 800-522-VDTs.

Meet to Cover Human Aspects

SAN DIEGO — The human dimension of information management will be the focus of the Society for Information Management's (SIM) 15th annual conference here Sept. 12-15.

Among the featured speakers will be Dr. Kenneth Blanchard, coauthor of *The One Minute Manager*.

The organization changed its name from Society for Management Information Systems in late 1982.

The registration fee is \$595 for members and \$650 for nonmembers, SIM said from Suite 600, 111 E. Wacker Drive, Chicago, Ill. 60601.

But Not Cure-Alls

Users View Workstations as Productivity Aids

By Tom Henkel
CW Staff

ANAHEIM, Calif. — Professional workstations generally improve productivity, but they cannot do everything. That was the collective opinion of four users who recently installed different vendors' workstations in their offices.

All four of the panelists who participated in a session on workstations at the recent National Computer Conference here said their management workstation projects were a success. Most, however, added that the workstation they selected did not include some features they would like.

Thomas Moreland, a systems research analyst with Atlantic Richfield Co. (Arco), recently adopted a network of Xerox Corp. Star workstations in Arco's Los Angeles headquarters. Arco installed the workstations, Moreland explained, because the firm estimated people costs within the firm were going up at an approximate average rate of 6% a year, while hardware costs were falling rapidly. In addition, most of the people costs were incurred by management-level employees.

Furthermore, among the people using the workstations, most employed the same basic type of cycle: a manager created a document, transferred it to a secretary, who then either forwarded the document elec-

tronically to someone else with access to the Star network or prepared a hard-copy document for distribution, Moreland said.

The reaction to the Star network has been mixed. For some, the system required a fair amount of training. For others, using the system was fairly easy.

McDonnell Douglas Automation Co. (McAuto) recently instituted a test project using IBM's Professional Office Systems software package connected to an IBM 3033 mainframe. The package was installed in 1981 and allows 397 McAuto staff members to transfer data and messages, Moreland said.

Unless all the managers in the

group have access to their own terminals, they tend not to use them, Moreland said. He did not use the system effectively when he had to share a terminal with several people, he added.

Jim McCready, a regional sales manager at RCA Cylex, a division of RCA Corp. based in Atlanta, and a self-professed "technological cripple," said his firm has had some success with Grid Systems Corp.'s Compass portable microcomputers.

McCready said that RCA Cylex was having problems with processing orders for the firm's communications products. Before installing the Compass workstations, McCready said his department was using a

manual system — the only automation being a small word processor.

After four months of using the Compass terminals, the only problem has been in connecting the Grid workstations to the word processing unit. That problem, McCready said, should be solved in the near future.

Attie Mattox, a private consultant with The Mattox Group in Los Angeles, has been testing an Apple Computer, Inc. Lisa workstation for several months. While generally pleased with the unit, Mattox said the word processing features were not exactly what she had expected. Furthermore, Mattox said while Lisa's graphics capabilities are impressive, they cannot transform the user into an artist.

Get the Picture: Articles on Graphics Sought

Is one picture really worth a thousand words? Or — more importantly — is the picture worth the cost of generating it in terms of time savings and productivity gains?

Computerworld's July 25 issue will contain a Special Report on graphics systems. The report will explore the latest technologies, techniques and applications in the computer graphics market, covering the range of applications from computer-aided design (CAD) to

all levels of business graphics.

In particular, CW wants to look at emerging trends in low-cost CAD and three-dimensional graphics, graphics terminals and software, the market for color printers and other output equipment and boardroom graphics.

CW would like to see the cost-cutting benefits and time savings that can be realized with a graphics system.

CW welcomes submissions of graphics application stories, tuto-

rials and other testimonials related to the report's topic. The manuscripts, which must be submitted by June 10, should be no longer than four to six double-spaced, typewritten pages. Preference will be given to articles with black-and-white photographs, charts or graphs (originals, please).

Articles should be sent to Bill Laberis or Jim Bartimo at Computerworld, P.O. Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

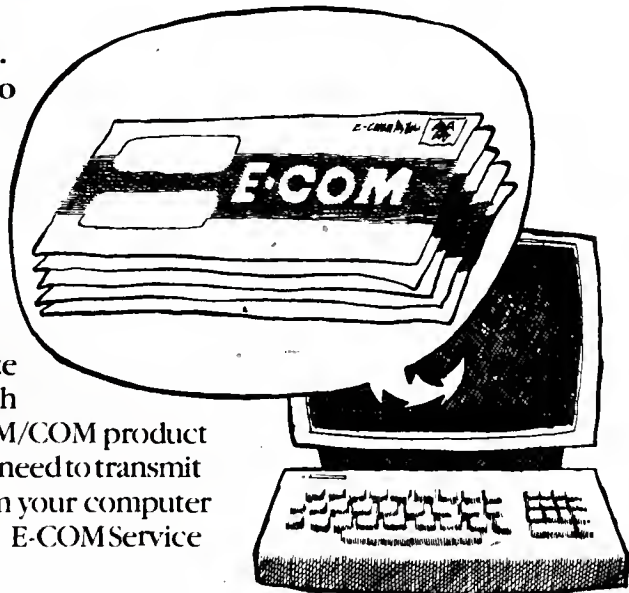
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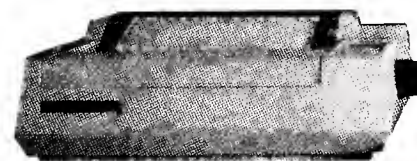


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Combination of DSS, Micros Seen Cost Cutter

By Jeffrey Beeler

CW West Coast Bureau

ANAHEIM, Calif. — The combination of personal computers and decision support systems (DSS) software can help large companies "dramatically" cut some of their major management expenses, according to Philip Evans, manager at Ferox Micro Systems, Inc. Speaking during a recent National Computer Conference session, Evans cited the example of a large hotel chain that uses a personal computer and DSS software to trim its financial planning costs by \$100,000 a year.

In the past, the hotel chain did all its internal financial planning with the help of an independent time-sharing service, for a total annual cost of \$100,000, Evans said. Recently, the user replaced the time-sharing system with DSS software and an Apple Computer, Inc. micro, which now allow the company to perform its financial planning activities internally, he said.

The switch from a time-sharing service to an in-house micro has enabled the firm to eliminate its \$100,000 expense item "almost entirely," Evans said. Although he identified neither the hotel chain nor the model of the Apple personal computer, Evans did estimate the micro's payback period at 15 days. Such case histories graphically illustrate the financial benefits that lie behind the surging popularity

of DSS-oriented personal computers, he added.

Evans said he knows of 2,500 businesses — including such major corporations as IBM and AT&T — that are already using DSS software with microcomputers to do financial planning and similar applications.

Another speaker at the NCC session entitled "Corporate DSS on Micros" was Robert Martinez, a consul-

tant with the Los Angeles-based management consulting firm of Peat, Marwick, Mitchell & Co.

Martinez focused on his own company's experience with an internally developed Health Care Financial Modeling System, which reportedly allows hospitals to speed the preparation of their fiscal projections.

Intended primarily for financial planning and analy-

sis, the system uses a combination of DSS software and an IBM Personal Computer to calculate automatically such items as payback, amortization, depreciation and tax-loss carry-forward.

The system, which can be tailored to each client's individual needs, also consolidates figures for business units, projects and product lines, the speaker said.

Martinez credited the sys-

tem with being able to prepare 8,000-variable financial projections that would prove impossible to produce by hand. He also credited the system with boosting the firm's consulting productivity and enabling the company to minimize its client fees.

C.H. Rogers, marketing vice-president for the Long Beach, Calif.-based Marine Terminal Corp., also spoke at the session.

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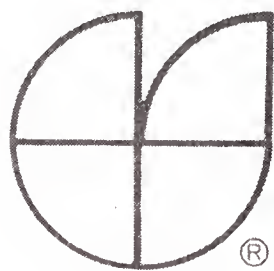
MEDIA, Pa. — A series of on-line international computer conferences will be offered by Seybold Publications, Inc. starting July 1.

The first two conferences will cover personal computers and electronic mail, respectively. Others will cover strategic planning for office automation, voice store-and-forward systems, electronic publishing and videotex.

This type of computer conference allows people who are geographically dispersed to discuss items of mutual concern and interest. Each conference will last six months and will revolve around a topic of mutual interest to participants.

Participation in the program costs \$2,500, and participants must have a terminal with communications capability, a dial-up modem and the ability to send and receive at 300 or 1,200 bit/sec.

More information is available through Seybold, P.O. Box 644, Media, Pa. 19063.



Cincom

Hotel Group Learns to Control Rampaging DSS

By Paul Gillin
CW Staff

ANAHEIM, Calif. — Formulating a decision support system (DSS) strategy after DSS is already running out of control was the perplexing problem that faced Holiday Inns, Inc.'s Hotel Group, according to Mary Ann Furniss, Holiday Inns' director of management sciences.

Furniss addressed a DSS seminar at the National

Computer Conference held here recently.

The company responded by forming a Management Sciences Group to control the proliferation of DSS and later moved the group into the Management Information Systems (MIS) Department. DSS has flourished so much since then that an executive position for it was recently created.

Use of DSS began as early

as 1974, when MIS began building a major corporate data base. The system was used mainly for retrieval at first, "but management [started] to see some patterns in the business they hadn't seen before," Furniss said.

Interest in DSS spread through the finance and planning areas, which began using "nearly every time-shared vendor in the U.S." to provide the resources MIS

could not, Furniss said. "Before we knew it, usage was out of control. By 1979, we realized we were in big trouble if we didn't try to slow it down."

MIS took the lead in centralizing in-house support for outside services. Holiday Inns chose one time-shared vendor to use while it worked to bring data in-house on a Digital Equipment Corp. Decsystem-2060

computer, Furniss said.

The Management Sciences Group was formed at the user level and later moved within MIS. Currently composed of 17 people with a core of five writing modeling applications, the staff functions primarily as a consulting group and also builds end-user applications and evaluates packages. The staff also drives the DSS planning function at Holiday Inns, Furniss said.

Mainframe tools include a financial modeling package, time-series analysis, presentation-quality graphics, statistical analysis and graphics and Fortran. Interactive systems are available for capital projects, budgeting, guest room rates analysis and forecasting. A DSS is also tied into Holiday Inns' 1,700-hotel reservation system.

With nearly half of Holiday Inns' DSS users now writing most of their own applications, the Management Sciences Group staff is now turning its attention to microcomputers, Furniss said.

The firm has elected to support IBM's Personal Computer, Radio Shack's TRS-80 and is looking at microcomputers from DEC, Apple Computer, Inc., Texas Instruments, Inc. and Fortune Systems Corp. The staff will not discourage a user from buying the micro he wants, "but if he wants to choose [one other than those we support], he's sort of swimming at his own risk," she said.

'Rocky Road'

The road to a successful DSS environment was a rocky one, Furniss said, and she pointed to several pitfalls other companies should avoid:

- Make sure your data base administration is strong. "Once we had 200 users with all the power in the world, they began to build their own data bases in their own ways," she commented. "It is very important to get this under control early on."
- Do not impose DP-favored models on users without their approval. This is one responsibility of a central DSS staff.
- Do not force DSS on unwilling users. "Managers have to feel ownership of the system or else they won't use it," she said. Once DSS is in use in some locations, it inevitably catches on.
- Avoid data overload. "Watch out for the accounting mentality," she said.
- Sell no DSS before its time.
- Provide significant and visible user support.
- Be aware of the user turnover problem.

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Micro-to-Mainframe Links Seen All-Important

By Robert Batt

CW West Coast Bureau

ANAHEIM, Calif. — Until microcomputers are consistently linked with mainframes in large data processing organizations, their usefulness will be very limited, an audience at the National Computer Conference was told here recently.

Speaking at a session entitled "Business Planning on Microcomputers," Dale Cooper, manager of management science at Getty Oil Co., said many software requirements must be met before micros can attain their true potential as business tools.

Cooper said Getty Oil has been unsuccessful to date in linking up its micros with host mainframes. "We want [IBM] 3270 emulation. So far, I am unable to link our micros with our mainframes, and so from a user point of view, the micro technology does not work."

In particular, linking micros with the IBM Systems Network Architecture is a problem, he added. This is causing a lack of enthusiasm among DP professionals at Getty Oil. "I can hardly say they are taking to microcomputers with a vengeance," he noted.

Software is another problem. "Our experience with Fortran, for example, indicates that its efficiency needs to be improved by a factor of more than 10 before it will become useful on microcomputers. There are a lot of problems here for software developers to solve," Cooper said.

Problem of Integration

Addressing the problem of integration, another session speaker, Betty Feezor, product manager for software design and development at Management Science America, Inc., said business

planning on micros is only valuable if micros are linked to application software on the mainframe.

"The heart of financial information in large corporations resides on the mainframe. For adequate business planning using personal computers, general ledger resources need to be tapped directly by the micro," she said.

There are very few easy ways to transfer meaningful data from the mainframe to the micro, Feezor admitted. The key to the successful application of the new technology, however, is to make it

easy for end users to link up with mainframe application software. "By establishing such a link, it is possible for a micro to function both as a terminal to the mainframe and as an executive workstation," she claimed.

Feezor cited a recent study conducted by International Data Corp. of Framingham, Mass., that showed that shipments of personal computers are growing at 62% a year and are estimated to rise to 87% over the next few years. Most of these computers are going into the business environment, she observed, so a crucial element of business planning on micros is to have text processing, word processing and graphics capabilities on personal computers.

Also addressing the issue of integration was Brian Fischer of Context Management Systems in Torrance, Calif. A former consultant with Booz-Allen and Hamilton, Inc., Fischer said micros need to deal with modeling applications because they form the basis of most business decisions. Vendors need to enhance the analytical capability of micros by providing more powerful graphics functions, he argued.

"The most effective approach to successful business planning is to provide user-friendly, cheap and accessible products that allow the user to explore and understand alternative courses of action and which allow managers to find out what is really going on," according to Fischer.

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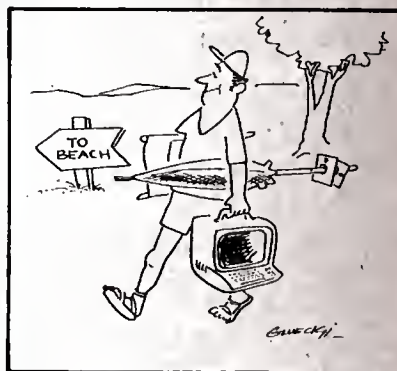
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CM 5-30

Businesses to Value Networking, Analyst Says

By Ed Scannell
CW Staff

ANAHEIM, Calif. — As more and more microcomputers populate corporate desktops in both large and small businesses over the next several years, many of these companies will value the networking of these systems and will link them to mainframes as a vital corporate asset.

This observation was made by Dale Kutnik, analyst for The Yankee Group, who chaired a session here last week at the National Computer Conference on distributed processing.

"If they intend to move information around, corporations will view networks as an asset. The trend of the 1980s will be to network these corpo-

rations' departments together," Kutnik predicted.

To qualify as a network, Kutnik said, a distributed system must be able to utilize stand-alone systems, have some form of interaction among the nodes and be able to communicate with mainframes.

The major advantages networking offers corporations, according to Kutnik, are increased efficiency of operations and control over the growth of information centers and nodes.

"Desktops make distributed data processing inevitable," Kutnik asserted. "However, most of the desktops out there have not been networked," he said.

By 1985, however, 50% of the in-

stalled desktop systems will have asynchronous communications adapters or ports or will have a built-in modem, according to Kutnik.

This present lack of networking capabilities among the majority of desktop systems could prove to be the equivalent of the Trojan horse in the distributed processing industry, he said.

Kutnik implied that while the proliferation of desktop systems appears to be advantageous, the lack of communications between desktop systems and mainframes will only cause corporate chaos.

Kutnik said the competition to supply corporations with networks will come down to "a battle of the networks" between IBM's System

Network Architecture (SNA) capability and AT&T's Antilope. The winner of this competition not only will control a corporation's network, but also will control the equipment that makes up the network, Kutnik maintained.

Not surprisingly, SNA will continue to be a hot topic and a much-wanted asset, Kutnik said. According to the results of a survey conducted by The Yankee Group, by 1986, 75% of Digital Equipment Corp.'s PDP-11 users will want SNA capabilities. He said the network these users will have will be a hybrid made up of SNA and Decnet.

While AT&T's networking capabilities are "on paper only," at this time, people should not underestimate the company's future impact in this market.

"Bell only has two nodes up and running, and they don't have a backbone for their network yet either," Kutnik noted.

Auditing Seen More Complex

ANAHEIM, Calif. — As computers continue to move from the old batch-oriented environment to integrated on-line networks, the job of system auditing will become increasingly complex. When outside auditors invade the DP department, DP managers have to be able to deal with and, more importantly, assist the auditor in his job to assure smooth auditing procedures.

That was the message conveyed by Frederick D. Winslow, director of computer auditing for the San Francisco firm of Main, Hurdman, when he addressed attendees of a session at the National Computer Conference here. Speaking on "Managing the Audit of Complex Computer and Communications Systems," Winslow said that when dealing with outside auditing firms, the best thing a DP manager can do is supply the auditor with as much pertinent information as possible.

"Be prepared with as much summary-level information as you can dig up," Winslow told session attendees. "Also be prepared for greater auditor demands than previously required because of the increased complexity of computer systems."

The speaker maintained that DP managers have to help install audit retrieval packages as well. He said that the more assistance the DPer can give to the outside auditor, the easier his own task in the whole auditing process will be.

"Audit retrieval packages can help the auditor discover what transactions are to be concentrated on and alleviate needless work. The DPer plays an integral part in getting these packages put into operation," Winslow said. "DPers have to give more information as to what the auditor has to use and how it can be used to do needed tests."

In auditing complex systems, DPers will have to take more criticism than in the past, Winslow said. He pointed out, however, that DPers should not take this to heart because "auditors rarely praise anyone."

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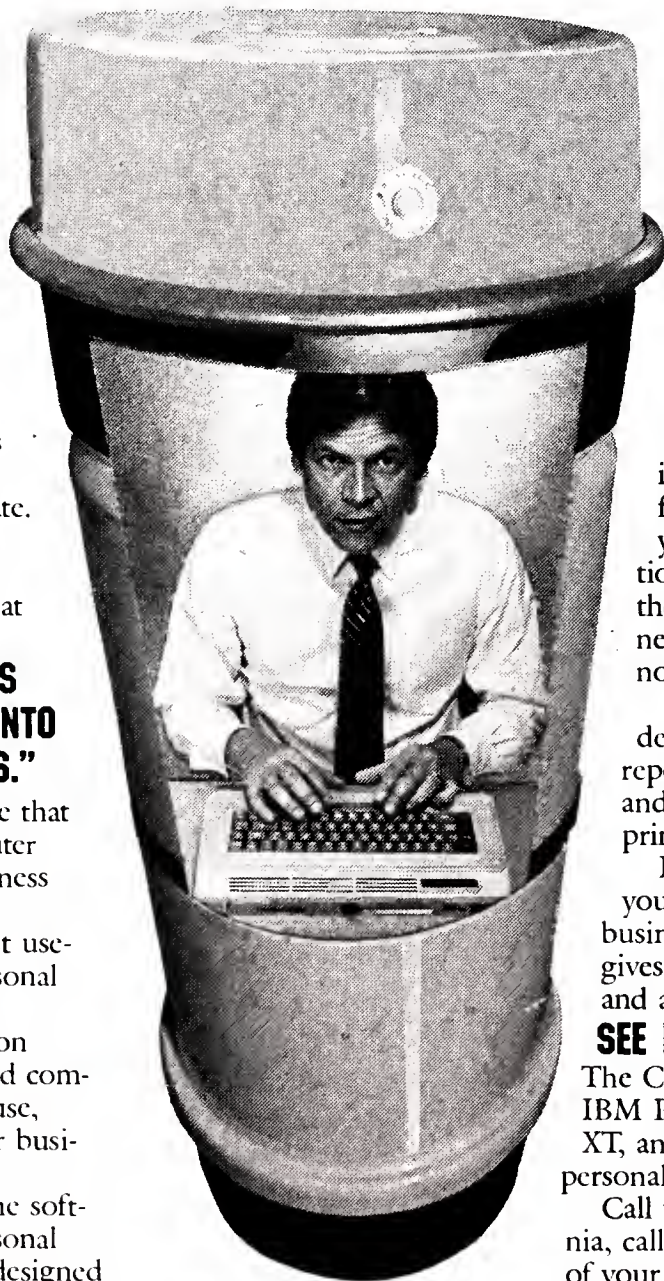
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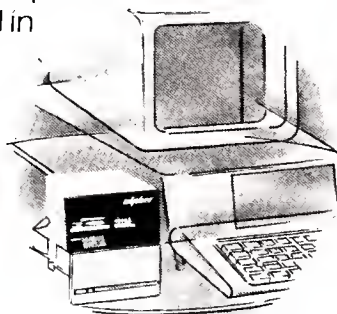
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Exec Finds Few Risks With Reusable Code

By Lois Paul
CW Staff

ANAHEIM, Calif. — "If you don't address the production of code on more than a line-by-line basis, you will not achieve productivity."

James A. Manara, vice-president of Security Pacific National Bank in Glendale, Calif., offered that advice to attendees at a session titled "Reducing Program Development

Risks with Reusable Code" at the recent National Computer Conference held here.

His firm implemented reusable code via a product called Ready Code from Raytheon Computer Services more than a year ago, and "we have had programs that have produced up to 95% of the code from generation and only needed 5% unique code," he said.

While investigating the Ready Code product, Manara's group set up a pilot project that essentially redid from scratch a program that had been completed by the firm. The project, which initially required six programmers, was completed by one programmer in 136 hours.

Five Programs

With the results of this project in hand, Manara's

group tackled a new development project for the bank that called for the development of five programs against tight deadlines. The introduction of reusable code to this process required changes to the functional design of the project.

"The five programs grew to 19 modules, which at first scared the project manager," Manara recalled.

Then he realized that it

would be easier to maintain these 19 modules than it would have been to maintain the original five programs, because the modules using reusable code had isolated many of the common functions.

The result: The bank saved 48% of coding, testing and development time and 33% of total front-to-back development costs for this project because of the use of reusable code, Manara reported. In addition, documentation was generated during the coding phase.

Manara conceded that testing was slow at first, but increased in speed as the development team gained confidence in the techniques.

Bob Lanegan, head of the Advanced Software Group for Raytheon's Missile Systems Division, told the attendees that use of reusable code can address the redundancy and maintenance problems that all DP installations must face.

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Speaker Advocates 'Human Side' Of Staffing Programming Projects

By Katherine Hafner
CW Staff

ANAHEIM, Calif. — One of the first questions a DP manager should ask when staffing a software project is whether to define the task first and build a staff around it or whether to define the staff first and build the task around it, according to Alyce Jackson of Technology Research Labs, Inc. in Hawthorne, Calif.

Jackson is a firm believer in the importance of the human side of staffing programming projects.

Speaking at the recent National Computer Conference on "Practices in Staffing Software Projects," Jackson explored various classical staffing methods. The session panel included Frank Emma of TRW Corp. and Marsha Lewin, an independent consultant.

Four Approaches

The first of four traditional approaches to staffing projects, Jackson said, is classical teaming, which can be a blessing because it nurtures the common ground shared by team members, but detrimental if technical managers have no sensitivity to human factors.

The second possibility is "egoless," or democratic, teams, where interaction ensures pride in the end product, but personal ambitions may get in the way of success.

A third method of staffing a project is with a chief programmer at the helm. The strength of this method, Jackson said, lies in the fact that senior people return to the mainstream of technical work. Its weakness lies in the difficulty of finding enough good people to move into chief programmer positions.

Last of all, Jackson noted, is the method of staffing through teams of specialists. The strength of this approach is based on the allocation of talent where it is most needed. But the drawbacks are the difficulty of evaluating performance and the burying of people in too many automated tasks.

Lewin offered a prognosis for the future of software projects. "In the next five years," she said, "I see a decrease in in-house development with more off-the-shelf purchases."

Lewin also sees a change in in-house capabilities, along with increased user implementation and more management involvement.

With many years of experience in staffing software projects to draw upon, panel member Emma suggested

placing people in jobs in which they feel comfortable, developing trust and tolerating mistakes. "Show me someone who isn't making any mistakes and I'll show you someone who isn't doing anything," Emma quipped.

In seeking a project manager, Emma said, one should find someone who is a good

planner, a good decision maker and a skilled leader with a record of accomplishments willing to be held accountable. Team members, Emma said, should be technically competent to do the job, while still perceiving the job as an opportunity.

Finally, Emma warned, cliques should be avoided at all costs.

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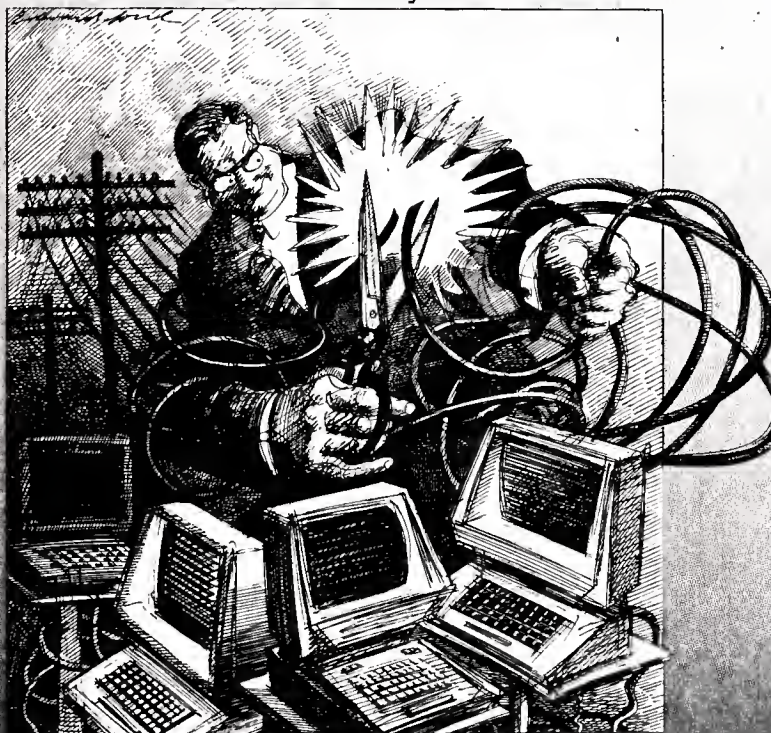
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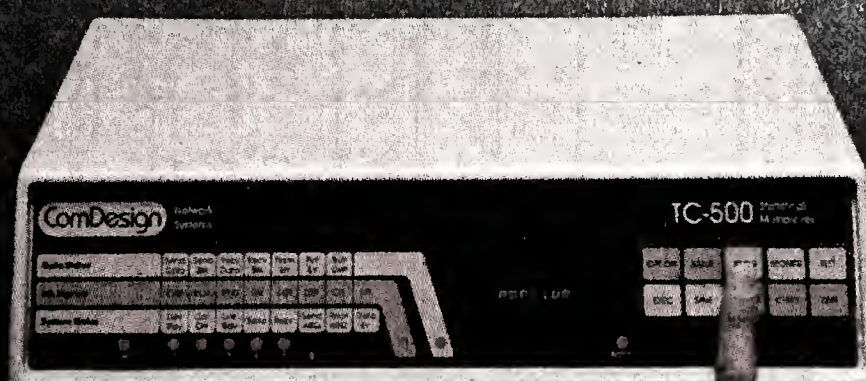
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Integrated Solutions Seen Best Bet in Financial Systems

By Robert Batt

CW West Coast Bureau

ANAHEIM, Calif. — Users should demand integrated solutions from vendors when looking at distributed financial planning systems, according to Frank Infante, engineering manager at Digital Equipment Corp.

Speaking at a recent National Computer Conference session held here, Infante said users want software that allows them to do multiple tasks within the same environment. "This is the direction that software is moving and it is the way to more powerful applications. Therefore, users should demand it in their systems," he said.

This will require software developers and computer vendors to standardize their products to allow for integration between different equipment. "More applications that allow for this integration will be forthcoming, and this will improve the productivity and effectiveness of end users," he predicted.

Infante argued that with end users demanding systems that have a uniform way of doing things, vendors will need to service and support them more thoroughly than in the past. To the degree that the DP department is involved, it will be focused on what end users are going to do, he said.

Looking ahead to future technology, Infante predicted that systems which allow users to handle voice integration will be a major asset in increasing productivity. Local-area networks will provide the capability for machines to work in clusters, enabling users to move data from one system to another without translation problems.

But the DEC executive admitted there is a long way to go. "As yet there are no vendors that provide such total solutions enabling one product to be linked with any other," he told his audience.

Looking for a System

Also speaking at the session was William Thomasmeyer, vice-president of microcomputer software for Ross Systems, Inc., a Palo Alto, Calif., manufacturer of financial software packages. Thomasmeyer said there are several things to look for in a financial modeling system. These include English-like commands and references to the matrix elements that form the basis of electronic spreadsheets, immediate and constant responses to user commands and menu-oriented or question-and-answer formats for creating financial models.

"Business managers want to analyze and evaluate their operations without waiting for central DP resources," he said. "They want to operate the equipment themselves. This means that DP managers must set common hardware standards and provide a systematic approach to distributed financial planning," he asserted.

Thomasmeyer said it is important for vendors to provide systems with open-ended computational capabilities that exceed the built-in features of the modeling language. This allows users to deal with any unique application problem they may have.

Furthermore, he noted, users in large Fortune 1,000-type organizations often require multilevel hierarchical, consolidated financial statements. Software needs to be flexible enough to take this into account.

The optimum solution, he suggested, is to provide a system that combines the strengths of the host computer with the strengths of the personal computing environment.

"The key to productivity," he concluded, "is that everyone uses the same language and has access to the same central data base on both micros and mainframes."



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Long-Range R&D Tech Plans Needed

U.S. Seen in Danger of Losing Top Spot to Japan

By Tom Henkel
CW Staff

ANAHEIM, Calif. — Unless the U.S. makes some quick, long-range plans to preserve its dominance in the computer market, it will lose its top spot. According to experts in artificial intelligence, high-speed numerical processors and defense systems, the Japanese have put in place long-term development programs which, unless U.S. computer manufacturers act soon, will make Japan the computing leader within 10 years.

Those were the views expressed by panelists in a session on "Fifth-Generation Computers" at the recent National Computer Conference here. The only hope, these observers contend, is for the U.S. government to help organize and focus the wealth of knowledge in U.S. companies. If these companies are not willing to

participate in such a venture, they should be forced into it.

Consortiums of high-technology companies in the UK and Europe are working feverishly to develop what has become known as the fifth generation of computers. But the biggest threat to U.S. supremacy is clearly Japan, noted David H. Brandin, an expert on worldwide research and development projects with SRI International, Inc.

Japan's Ministry of International Trade and Industry (MITI) is already into the second year of its 10-year development project aimed at taking control of the worldwide information processing industry by the 1990s, according to Prof. Edward Feigenbaum, an artificial intelligence expert at Stanford University in Palo Alto, Calif.

MITI's focus, Feigenbaum said, is to figure out which areas of technol-

ogy will be most pressing 10 years from now and start developing those technologies before the rest of the world. MITI has principally targeted "the sleepy, sluggish U.S. companies," as the force to beat in the world high-technology market, Feigenbaum noted, adding that Japan is using a similar strategy that boosted it to a position of power in the auto industry.

But the consequences of losing dominance in the world technology market are potentially far more serious for the U.S. than sliding from the number one spot in the auto market, noted Adm. Bobby Inman (USN Ret.), president of the Microelectronics and Computer Technology Corp. The potential for high-technology products far exceeds the potential for the auto industry over the next 20 years. Consequently, loss of control over technology could have significant effects on the U.S. economy, he stated.

Poised for Great Strides

The Japanese appear to be poised to make great strides in almost every area of computer technology, Feigenbaum said. Development projects now under way in Japan include artificial intelligence, computer-aided design and manufacturing and large-scale numeric processors, he added. Feigenbaum, as well as Dr. Sidney Fernbach, one of the principal developers of Control Data Corp.'s line of supercomputers, noted that U.S. manufacturers are too concerned with yearly profits. They therefore pass up opportunities for future technological developments in favor of short-term profits.

Noting that IBM and its \$1.6 billion research and development budget is more than MITI has for a 10-year development effort, Feigenbaum said that since IBM, as well as other large computer compa-

nies, does not share the results of its research, many technological developments go unused. As an example, Feigenbaum noted the strong advances made in artificial intelligence by IBM during the late 1950s. For some reason, he said, IBM decided not to pursue those AI projects, thus slowing the development of AI in the U.S.

The lack of a directed U.S. technology research program could also hurt national defense, noted Dr. Robert E. Kahn, a researcher with the U.S. Department of Defense (DOD) Advice Research Project Agency in Arlington, Va. Kahn said if the U.S. loses its prominence in the technology industry, the DOD could be forced to buy technology items from other countries, creating a potential supply problem.

IBM Group Aims At Construction

CHICAGO — Common, an IBM computer users group with over 2,200 installations worldwide holding memberships, recently established a project within its organizational structure to address the special needs of construction companies.

As with other Common special interest groups, the construction group will offer attendees of Common conferences a number of sessions dealing with hardware and software systems that provide, in this case, construction-related solutions. The sessions should be of interest to both technical and management personnel, according to a Common spokesman.

Common conferences are slated for the spring and fall in various U.S. cities. The fall meeting will be held Oct. 22-26 in Phoenix.

Further details on the group can be obtained from Common headquarters at Suite 1717, 435 N. Michigan Ave., Chicago, Ill. 60611.

Course to Cover Productivity

NAPERVILLE, Ill. — Deltak, Inc. has announced a video journal series on productivity measurement.

The four-course series, called "Measuring Programmer Productivity," was designed for data processing managers, application project managers, designers, systems analysts and programmers. Data processing auditors may also benefit from the series, Deltak said.

Topics covered include a basic definition of terms, why many productivity measurement attempts fail, an overview of basic measurement techniques, a structured method of performance measurement and techniques for maintaining an ongoing measurement program, according to Deltak.

The courses cost between \$50/mo and \$125/mo or can be purchased for \$1,750/course. Deltak is located at 1751 W. Diehl Road, Naperville, Ill. 60566.

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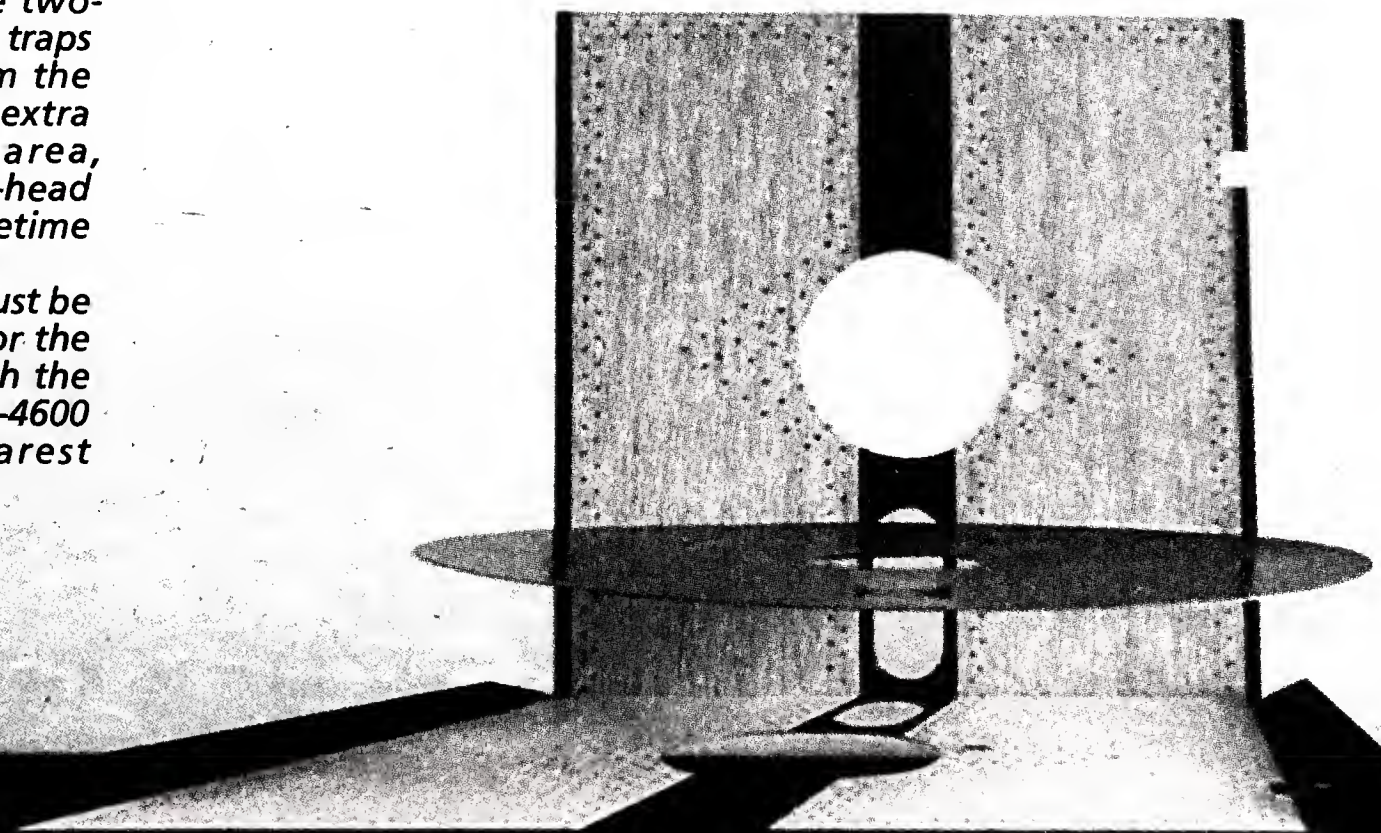
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Exec Explains Bank's Steps to Up Productivity

By Bob Johnson

CW New York Bureau

ANAHEIM, Calif. — As the cost of DP labor exceeds that of hardware, methods of increasing the productivity of DP personnel are becoming increasingly important to computer professionals. At a recent session here at the National Computer Conference dealing with how to help DP executives cope with productivity problems, panelists discussed ways of getting the best results from their workers.

One speaker, Bill Selmi, a vice-president of the Central Systems Group of the Crocker National Bank in San Francisco, said that his firm had no real answers, but has developed an approach to battling the productivity problem.

"We have found that it is easy to spend budget dollars on seeking solutions, but that method does not always yield results," Selmi said.

The speaker explained that his bank had set up a task force of six DP managers to look at productivity. The group listed three objectives, including identifying areas that needed improvement, seeing what was available on the market and investigating if the proposed improvements were measurable.

"We really struggled to find where productivity improvements should be installed throughout our DP life cycles. We decided to go to our in-house DPs to find out," Selmi noted.

A 30-question questionnaire was distributed to 300 of the bank's DPs, Selmi said. The questions were designed to find out how important personnel felt the areas of programming tools, technical environment, systems design, hardware, staff and management were to the successful and productive operation of DP.

The weighted results of the questionnaire revealed five areas that the bank determined to be the most significant in increasing pro-

ductivity. Those areas included the quality of user requirements, documentation, quality of internal design (change control), the adequacy of on-line testing response time, the quality of external design and project management and control.

In response to the survey's findings, Selmi said that Crocker identified four steps of action to answer its DPs' questions and to boost the

company's productivity.

The first step was to give on-line programming capabilities to Crocker's programmers. "About 35% of our programming workstations are now capable of permitting debugging actions. We are also looking at possible integration of personal computers to enhance this kind of work," Selmi said.

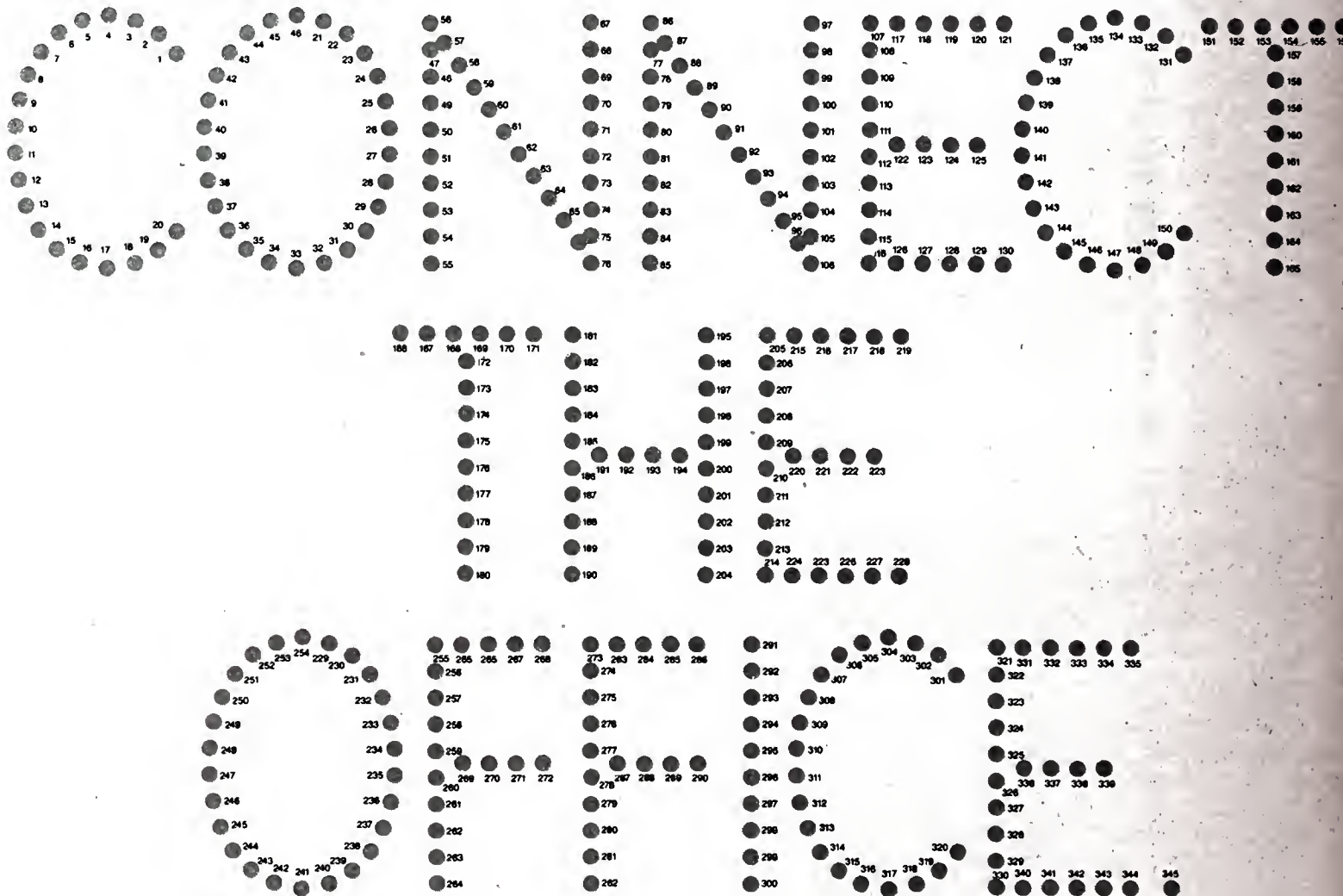
Project control, the second step, was also addressed by

the Crocker task force. Methods for estimating project techniques, tools for project scheduling, project life-cycle tracking and quality assurance were examined.

The third step was education. "We found the education and development of the DP project manager and the end user as the two places of most importance in education. Training the DP in project management and

training the user in DP and project development appear to be positive productivity approaches," Selmi maintained.

The fourth step involved the establishment of quality circles. This step was initiated to enhance DP productivity. The speaker said that selected DP topics were examined, including operations, interfaces, standards and DP security.



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Systems Development Change Seen Inevitable

By Robert Batt
CW West Coast Bureau
ANAHEIM, Calif. — The need for programmers to develop user-friendly systems will result in fundamental changes in systems development, attendees of the recent National Computer Conference were told by Dean Wardman, manager of IBM's Santa Teresa Laboratory. Speaking at a session entitled "Managing Computer

Change," Wardman said it is essential to raise the consciousness of programmers to the needs of users. "The challenge is to develop programs for users who have no data processing experience, and such programs have to be attractive, labor-saving and with interfaces that are very simple," he noted. This, he asserted, will lead to two major changes in focus:

- In software develop-

ment, programmers must change their focus from functionality to usability of systems by non-DP personnel.

- In their interactions, programmers must focus on the end user in the information center as well as DP management.

It is vital, Wardman claimed, to establish some kind of formal plan for usability by which program-

mers can track their results. "It is important to test for usability and be capable of change as the product is being tested. Programmers need to choose testers who are qualified and independent users. They must pay attention to the feedback before the project is let loose." The prototyping of programs is one of the best ways to produce user-oriented systems.

Discussing systems development life cycles, another session speaker, Gordon Davis, a professor at the University of Minnesota, said it is important to estimate the degree of uncertainty in any particular project before deciding on a course of action. "It is necessary to define the characteristics affecting uncertainty. These include the number of users and analysts, the utilizing system and how complex the application is," he said.

Using this approach, he argued, it is possible to get a picture of the degree of uncertainty from which the DPer can select strategies and methods. Davis outlined a number of approaches to determining user requirements based on the degree of project uncertainty.

Discussing the problems faced by DP professionals in project development, Steven Alter, a consultant with Consilium Associates of Palo Alto, Calif., warned the conference attendees against putting users in charge of development projects.

"Managers of technical work must understand the work they are managing. To put a user in charge of a project in which he does not understand all the technical aspects can lead to trouble," Alter observed.

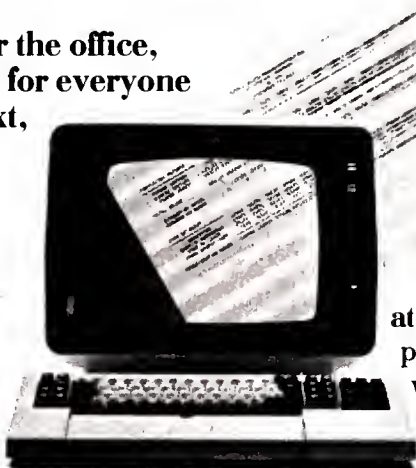
Users, he said, do not participate in projects in a systematic way. They do not understand the technical implications of systems changes, do not appreciate the effort needed to change large systems, do not understand models and refuse to read specs.

"All this leads to a forlorn hope syndrome among data processing professionals where they sit around knowing things are going wrong but not knowing what to do about it," he said. The solution, he maintained, is to carry out a serious continual evaluation of why the project should be successful, rather than manage it according to budget and schedule.

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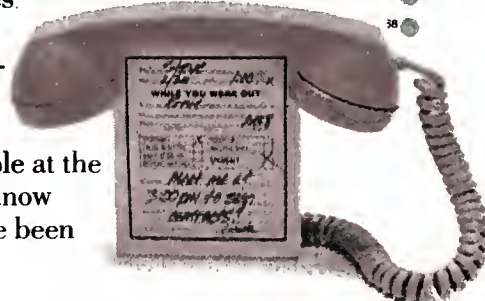
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Aiken Portrayed as Uncompromising, Energetic

By Marguerite Zientara
CW Staff

ANAHEIM, Calif. — It's no secret that Howard H. Aiken oversaw the design and development of the electro-mechanical Mark I computer in 1944 and of three subsequent large-scale models. What may not be so clear is what made Howard Aiken — and the Harvard Computation Laboratory — tick back in the days of World War II. Two Pioneer Day sessions at the recent National Computer Conference here attempted to shed some light on the man and his motivations.

Presented by a stellar collection of panelists, most of whom worked with Aiken during the Mark I, II, III and/or IV era, the sessions brought to light sometimes conflicting views of the man. Not open to dispute was his conservative approach to engineering, his commitment to accuracy and his belief in the vast potential for computer applications in business as well as science.

Besides technological innovation, one of Aiken's greatest contributions was his stimulation and inspiration of his graduate students. One of those students, panelist Kenneth Iverson of I.P. Sharpe Associates, went on

to develop APL.

"Aiken stimulated students with the idea that there was much work to be done and that they had the ability to do it," Iverson said. "He also provided a feeling of adoption into the fold, with easy and intimate access to people more experienced in one's chosen field."

On the other hand, "even though one always got a patient hearing and a careful explanation in answer to any question," Iverson said, "one couldn't help feeling that one was asking stupid questions."

'Mephistophelian Look'

Aiken was "forceful, energetic, self-assured; he dominated any room he entered, and he had a positively Mephistophelian look," recalled panelist Fred Brooks Jr. of the University of North Carolina, who went on from Harvard to design the 360 at IBM. "He liked spunk," Brooks added, "so those of us who were refractory and difficult got along with him quite well."

On the flip side of that coin, however, was what Brooks speculated might have been Aiken's major "character flaw" — he was "not unwilling to unleash his full powers on the little people, those not as powerful as he, such as waiters or airline clerks."

Although Aiken was relentless in his demands on those working with him, "he respected our results, conclusions and our writings," Brooks noted. Brooks observed that it was not important to Aiken to be part of the "clubs" of computer researchers active at various universities — and in fact, "it may have been important to him not to be."

With "very important" work being done at MIT, Princeton and elsewhere at the time, Brooks said, "I believe the field would have advanced faster — as it did in physics where the research was generally known by everybody — if we'd shared the research."

Nothing Insular

Anthony Oettinger, still at the Harvard Computation Laboratory (now called the Aiken Computation Laboratory), pointed out that while Aiken "was not clubby in the standard sense, he had a lot of fingers in a lot of different pies. There was nothing insular about him."

Furthermore, "none of us ever caught him in any slightest breach of integrity, and that's more than one could say for a hell of a lot of people around."

Maurice Wilkes, a staff

consultant for Digital Equipment Corp. and a pioneer on the Edsac computer at Cambridge (England), gave some unique observations as the only panelist who was not at Harvard with Aiken. "I was rather afraid of Aiken; I admit it," Wilkes acknowledged. However, by 1950, "Aiken was no longer in the mainstream of development work, and we didn't look to him then as a leader."

"Furthermore, attempts made here today to say that he was right and we were all wrong are not borne out at all," he said. In addition, "Aiken was technologically backward," he claimed.

"Aiken's technological aims seemed to us very pedestrian. Aiken did dominate, but he didn't seek to have yes-men around him," Wilkes recalled.

"He chose outstandingly able men, although they weren't allowed much exposure. When publications came out of the laboratory, they were attributed to 'the staff of,' and everyone's name was listed alphabetically, with Aiken's, of course, at the head of the list," he explained.

"Aiken was a man of action as opposed to intellectu-

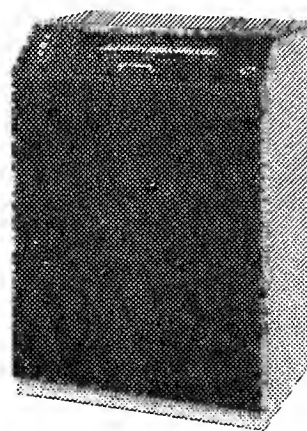
alization, was a superb organizer and a leader of men, if autocratic," Wilkes said. "He knew exactly what he wanted and could get the support he needed; he never let his

sponsors down.

"Even though he could be blunt and uncompromising," he concluded, "I also found out what a delightful companion he could be."

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Many of the products that will be demonstrated reportedly are state-of-the art research tools previously unseen by more than a handful of individuals directly involved with their development.

The conference program will be kicked off with a keynote address by former astronaut Capt. James A. Lovell Jr., who currently is senior vice-president of Centel Business Systems. He will address the subject of software and computer control of life-critical systems.

Other sessions include "Tools and Methodologies: The Perfect Match or the Odd Couple?" and "Impact of Future Technology."

The conference is being sponsored by the Institute of Electrical and Electronics Engineers (IEEE) Computer Society, which can be reached through P.O. Box 639, Silver Spring, Md. 20901. Full conference registration is available for \$200 (IEEE members) and \$250 (nonmembers) before July 11.

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New Class of Information Analysts Predicted

By Jeffry Beeler

CW West Coast Bureau

ANAHEIM, Calif. — Application development will likely disappear as a separate DP job category by the '90s, but for the time being, application programmers still have many more employment opportunities than their systems counterparts.

That was the conclusion reached by Gladys Brantley, Interfet Corp.'s vice-president and controller, who spoke at a recent National Computer Conference session dealing with "Career Development in the 1980s."

Brantley predicted the emergence of a new class of systems professionals, which she called information analysts.

Unlike systems employees with traditional program-

ming/analysis backgrounds, information analysts will come primarily from the business rather than the technical ranks, although the majority will boast at least a smattering of formal DP training.

In the not-too-distant future, the advent of this new class of computing professionals will have profound consequences for the application programming job slot as it is traditionally defined, Brantley predicted.

By the '90s, the burden of developing new user software will be borne much more heavily by the emerging information analysts than by conventional application programmers, Brantley said.

One of the main roles of the information analysts will

be to develop new applications by "cobbling together off-the-shelf software packages," Brantley predicted.

Because of the rise of the information analyst class, end users soon will no longer have a pressing need for today's typical application programmers, she said.

If application programming fails to vanish from the scene altogether, it will at least shrink substantially or evolve to become an increas-

ingly design- and analysis-oriented function, according to Brantley.

At present, however, application programmers can still find work with relative ease, even though recent college graduates typically prefer systems programming, primarily because it has been "glamorized" in undergraduate computer science courses, Brantley said.

Brantley predicted the eventual emergence of soft-

ware engineering as a full-fledged discipline in its own right.

"Software technology is quickly becoming an engineering field in the same sense as architectural or aeronautical engineering," she said.

Software engineering will require extensive formal education and will encompass a multitude of highly technical subspecialties, she said.

Panelists Call for More Research On U.S. Resiliency to DP Disaster

By Patricia Keefe

CW Staff

ANAHEIM, Calif. — Despite a recently released

study that found it unlikely that the U.S. would come to a screeching halt in the face of large-scale computer failures, more research is needed to determine the level of U.S. vulnerability to DP disasters, panelists at a recent National Computer Conference seminar here agreed.

Participating in the session were moderator Rein Turn, a professor at California State University; Prof. Lance Hoffman, George Washington University; Blake Greenley, Internal Technology Group of Citibank New York; Sheila Brand, an adviser on computer technology to the Inspector General of the U.S. Department of Health and Human Services; and Dr. Willis Ware, Rand Corp.

Turn recently chaired an American Federation of Information Processing Societies, Inc. (Afips) panel that produced a report entitled "Observations on the Resilience of the U.S. Information Society." According to the report, adverse effects of computer failures include sudden disruptions or long-term erosion of daily lifestyles, irrecoverable disruption of the economy, paralysis of national finance systems, decline in the standard of living, erosion of constitutional rights and increased dependence on foreign powers.

According to Turn, these effects could result from any one or a combination of the following computer crises: a sudden loss of a large number of computer systems; capture of systems by a terrorist group, sabotage or subversion; an accumulation of errors; deliberate misuse of computer capabilities; and irrecoverable computer dependence.

As a precautionary measure, Turn encouraged the examination of a variety of applications to determine their level of vulnerability.

Overall, the Afips report found the U.S. to be resilient

"thus far" to computer catastrophes. However, Turn pointed out that while the U.S. appears to have satisfied a number of resiliency factors, computerization is increasing, corporate memories may be fading, contingency planning has been conducted on a limited scale and DP disasters to date "have not been convincing" in terms of their devastation potential.

To combat this erosion of U.S. resiliency, Turn suggested that:

- Public awareness of computer vulnerabilities be increased at the same time its level of computer sophistication is increased.

- Industry sectors plan for resiliency at a functional level.

- Technical measures be developed to forestall vulnerability.

- Resilience be a part of the information policy of the U.S.

- Guidelines and standards for resilience be developed.

- The problem be continually monitored by industry associations, which must develop plans to maintain and enhance resilience.

Despite support for the report's results from two other panel members, Hoffman took "strong issue" with some of its conclusions, asking the "classical question to risk assessment: How safe is safe enough?" He criticized the report for what he termed its vagueness and "weasel wording," suggesting that the report creates more questions than it actually answers.

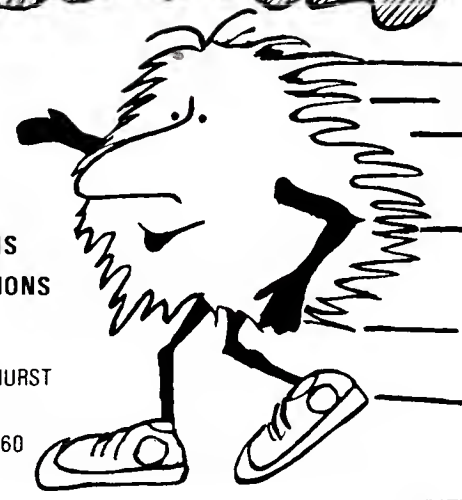
Hoffman questioned how much of society had to be affected before vulnerability became a problem and also asked how long an incapacitating computer failure had to be in order to be called "paralyzing." He also charged that society does not currently have sufficient legal safeguards to help enhance resilience.

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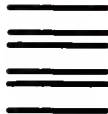
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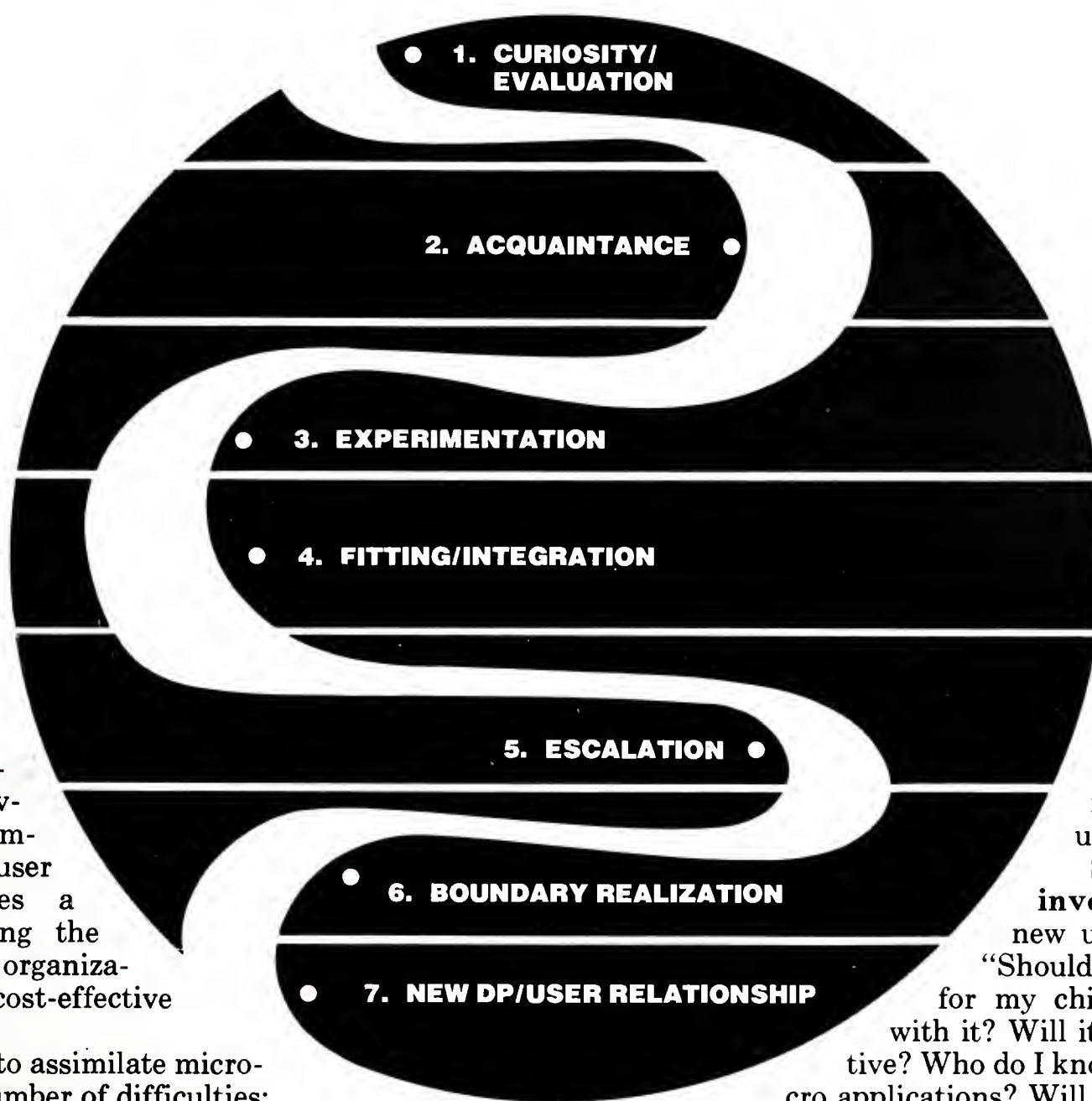


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The Microcomputer User Learning Curve

By Thomas J. Gambino
Thomas W. Johnson
Diane D. Wilson



Managers who want to evaluate the potential productivity benefits of microcomputers need to understand how people learn about micros and incorporate them into their work.

One practical tool for analyzing this learning process is a "microcomputer user learning curve," a description of seven behavioral stages leading to computer literacy. The user learning curve provides a framework for addressing the problems that often stall organizations along the road to cost-effective microcomputer use.

As companies struggle to assimilate microcomputers, they face a number of difficulties:

- The DP division feels threatened. The fear is that micros are being used as toys; that users are developing unsound, unreliable software; that the corporate data base is unsafe; and that all micro applications will have to be approved before production use.
- Equipment and software go unused. Microcomputer hardware and software are not effectively used because of insufficient training, oversold expectations or inadequate communications with the corporate mainframe.
- Incompatibility spreads. Systems require functionally similar but different software, user training is redundant and applications are machine-specific.
- End users regard DP as the enemy — uncooperative, unresponsive to new ideas and quick to recommend studies whenever faced with unavoidable situations.
- Language barriers arise. Users need more training in order to be effective, software is being misused and applied to inappropriate applications and needs have outgrown capabilities.

Many of these problems and growing pains can be controlled and, in some cases, prevented, if management recognizes the user

learning curve and addresses users' needs at each stage. Following are the hallmarks of the seven stages for a typical individual: 1) curiosity and investigation, 2) acquaintance and language acquisition, 3) experimentation, 4) fitting and integration, 5) escalation, 6) boundary realization and 7) improved user/DP relations.

Stage 1: Curiosity and investigation. Typically, the new user asks many questions:

"Should I buy a micro — for me, for my children? What would I do with it? Will it help me be more productive? Who do I know who is familiar with micro applications? Will it make me more effective on the job?" At this stage, the user is ambivalent about

the prospect of becoming computer literate.

Stage 2: Acquaintance and language acquisition. By no means are we suggesting that a new user can acquire all the necessary language at this early stage. But for the user who is uncomfortable with the jargon and who may even in the past have avoided DP staff because he didn't know their language, some initial technical experience and understanding is required. What is a ROM, a RAM, a floppy disk or a mouse?

Often this jargon is acquired through careful observations of other users: children at home, professionals at work or sales demonstrations at computer stores. Usually at this stage, the new user begins reading about microcomputers, motivated by a set of questions regarding how much value this technology will add to their work or activities. The user tries playing a game, formatting a simple spreadsheet or word processing a short letter.

It is usually at this stage that the user becomes sensitized to the "feverishness" of this nascent business — the vast sources of assistance and information on the subject of personal computers. He also realizes that a set of complex choices face him regarding

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software, hardware, training and support. Before going into stage three, the user performs an important task — usually a simple computer exercise that becomes a “validation” of the microcomputer’s technological capability.

Stage 3: Experimentation. With just enough knowledge and language to make him confident, the new user begins to think seriously about investing resources in the technology. With some uncertainty

as to what possible applications might offer the most value-added first learning opportunity, the new user begins to seek out expert advice on software and hardware quality and availability of peripherals. While he basically understands the “nature of the beast” at this point, he is anxious and frustrated, because he is overloaded with product and sales information.

During this stage, the user begins to discriminate for himself among

the technological choices — he experiments with different hardware and software, perhaps using the same application as a standard for comparison. Or the new user has borrowed a micro or obtained access to one and experiments with a particular software package.

Inevitably, during this stage, the user becomes aware that learning to use this technology requires a major time commitment. In addition, he quickly realizes that a balance exists

between the costs of learning, acquiring and applying the technology and a return on new skills, productivity, knowledge or efficiency.

Stage 4: Fitting and integration. At this critical stage, the user makes a number of key decisions, based on his own analysis of the costs and benefits of becoming a microcomputer user. He becomes more discriminating in matching his skills, comfort level, application priorities and resources with available hardware and software. He carefully considers what added value this technology can have for his work, his position, his authority. On the down side, he weighs the costs of time invested in learning how to use the technology.

At this stage, he looks at the technology from the long-term perspective. Many of his questions are philosophical. Now that he suspects what investment and learning are required, he begins to consider seriously whether he really wants to change to accommodate the technology and to invest the time in learning how to organize, analyze and think differently. If, after weighing the costs and benefits associated with learning how to use the equipment, he decides to proceed, he then makes plans for the first important, relevant application, identifies the software and hardware he wants to purchase and, in many cases, makes one last attempt to solicit expert approval for his choice.

Stage 5: Escalation. This is the “hands-on-can’t-get-away-from-it” stage. While the user shows concern over the amount of time required to develop a data base or an analytical routine or print a letter, he is somewhat cocky. The first application is successfully completed, with all the mistakes, crashes and desperate phone calls to more experienced “users.”

Typically at this stage, the user can be seen flipping through pages of documentation in the user’s manual. Upon completion of the first significant task, he is eager to find new applications — old problems to be solved through better records, more systematic analysis, more professional reports. The user becomes an advocate and seeks out others to join him. At this stage, users groups take on meaning — for sharing problems and stories of inexplicable computer behavior and for generating new ideas for applications, such as communications with other microcomputer users in the organization.

Stage 6: Boundary realization. After some time, the user begins to discover limits to using the microcomputer. These include software inflexibility, limited access to important data, lack of ability to program, time constraints and required restructuring of his work and leisure time. Without a support system of some kind, the user may become discouraged and skeptical, questioning the value of his new knowledge.

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for working out this situation. He may pass the "micro application" work to someone else, or he may seek advice on how to speed up the learning process. He may become a more critical evaluator of software at this stage and may set some definite parameters for what he will and will not use in the future. He may make plans at this stage for acquiring peripherals.

The user inevitably realizes, however, that in order to develop some long-range microcomputer applications project plans, he will need both technical assistance and additional resources to reduce the time he spends on new applications. He also acquires an appreciation for the value of coordination, group learning and facilitation of the entire process with expert assistance and support. In summary, realism and experience have replaced the naive exuberance of the earlier stages.

Stage 7: Improved user/DP relations. At this stage, the user appreciates the need for high-level language and technical expertise while becoming more confident of the value of his own business expertise in developing new applications. He yearns for the opportunity to speed up his learning process and expand his repertoire of applications.

The possibilities for electronic mail, interactive analysis, downloading from large data bases and graphics production become important and require coordination with a number of users and technical staff. He develops more sophisticated needs and is better able to communicate them.

Plans are developed to allocate resources and technical expertise for such applications. An education function is developed to support the development of microcomputer networks, and new applications are identified to support business plans and objectives. A corporate policy is developed to identify important productivity objectives, and the more sophisticated users provide support, education and advice to new users. Clearly articulated costs and benefits are identified regarding future microcomputer expansion and applications.

Applying the Curve

The microcomputer user learning curve reflects the

stages of development of a "typical" individual. A number of factors influence the success and rate of development through the stages: for example, whether the early stages occur at the user's own

initiative, in his home or at work; the degree and quality of training and technical assistance available during these early stages; and the learner's degree of motivation.

The following three examples illustrate the organizational and individual implications of the learning curve.

The first describes the marketing/selling strategy of the "neighborhood" mi-

crocomputer stores. The second discusses the efforts of a large DP organization to coordinate and plan the introduction of microcomputers. The final example presents the activities of an end-user



division for supporting users throughout the entire learning process.

Every successful microcomputer salesperson, whether he realizes it or not, understands the user learn-

ing curve. After all, selling is moving the customer through a decision process, educating him and convincing him that the quality of his work or leisure will be improved by the product. A

good salesperson is extremely effective in the early stages of the curve, but provides little meaningful support for the more sophisticated user.

The microcomputer sales

process is geared to attracting the curious user/prospect who wants to investigate the advantages of owning a microcomputer. One of the salesperson's first objectives is to help the user

become comfortable with the jargon of the product. Demonstration materials and advertising brochures are designed to minimize any association with the unfamiliar — the user is exposed to messages that convey how easy it is to learn.

In a relatively short time, the user is given a demonstration of the technology and encouraged to practice. He might acquire a false sense of confidence that in fact the learning process will be easy and short. The prospect is entertained with a "canned" demonstration, usually geared to his interests and first application need.

The salesperson must make a critical decision during this combination learning/selling experience. In order to achieve his goal of selling a new technology, the salesperson must be able to assess how much new information the user/prospect can handle — a very delicate and sophisticated art. A reasonable objective after the first or second visit is to push the user/prospect to that validation process in the second stage of the learning curve, whereby the user must satisfy himself that "good information in" means "good information out." At this stage or visit to the store, the prospect is offered a variety of reading material and demonstration packages, often on a loan basis. The salesperson is careful not to push the prospect too hard.

It is when the prospect reaches the third stage that the salesperson attempts to close the sale. The user has identified an important application, can discuss hardware options with some confidence and raises questions about what to do after the purchase. He has obtained information from co-workers regarding what plans may exist for providing microcomputers, and he understands their potential value in his work. With the sales staff's assurances regarding technical support, training classes and money-back guarantees, the user decides to buy.

Attention to the user's learning needs by the microcomputer salesperson often stops at stage three.

Large DP Organization

The experience of a large, service-oriented DP department provides a second illustration of the learning curve

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We've also given the 5540 a more powerful microprocessor-based controller that will cluster up to 32 devices. Or you can choose a compact tabletop controller. You also get a choice of reduced size or standard displays, and 80 or 132 column data formats.

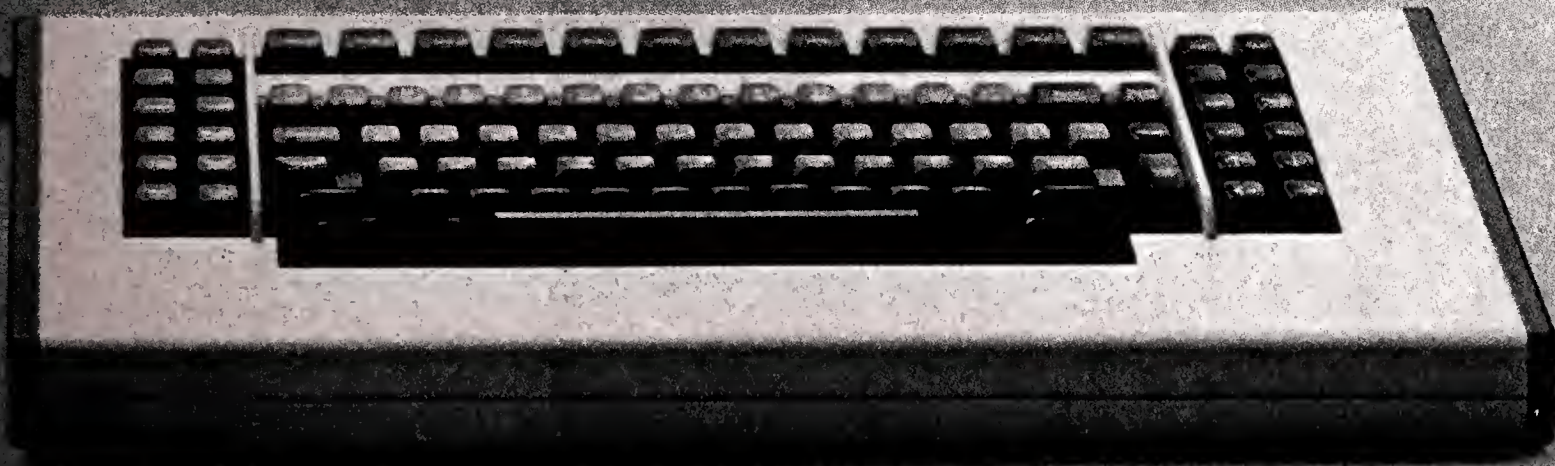
To improve operator productivity, the 5540 features a detachable keyboard with 3270-like layouts; 24 program function keys; a non-glare, high resolution tilt screen; plus a status line that includes a row and column counter.

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in action. The department director saw micros as a good opportunity for improving operations, reducing costs and increasing organizational productivity. He implemented a formal program to coordinate the introduction of micro technology. In many ways, this program recognized the various stages of the learning curve and supported the various levels of user maturity through specifically designed and well-coordinated procedures.

The curiosity stage was extremely significant to the overall success of the program, as at least two "micro shops" were organized and stocked with configurations from several microcomputer vendors. As an additional "carrot," a micro software library of packages suitable for preliminary investigation and exploration was made available in each of the shops. Users found these resources helpful in introducing microcomputing and were easily moti-

vated to move into the acquaintance stage of development.

The acquaintance stage, however, involved a significant effort on the part of the DP department. In order to allow users to learn the jargon and gain confidence, the organization developed rather sophisticated demonstrations and courses — activities that acquainted the users with generalized software such as Visicorp's Visicalc, as well as application-oriented systems such as a pension adminis-

tration system. In addition, a microcomputer newsletter was distributed quarterly, describing interesting happenings in the microcomputer industry.

The experimentation stage became the most resource-consuming component of the program, as the DP department began to implement specific applications that users could install and operate on their own local microcomputers (in many cases a machine borrowed from the micro shop). These applications were selected initially to establish business value to the organization; in addition, they were an efficient, cost-effective way to help users understand and appreciate the technology.

The fitting/integration stage of the user learning curve was supported through the establishment of codes of good practice designed specifically to help users assess the value of technology and to provide guidance and direction for independent (of DP) problem diagnosis and application development. The most significant code defined a micro application development process, a procedure for building applications in small, discrete phases. This procedure was oriented around prototyping and experimentation rather than the more traditional mainframe project life-cycle approach.

This particular code of good practice, as well as several others, was designed to support and maintain end-user self-sufficiency. While the DP department still had a very important role to play in the fitting/integration stage, the users were given enough help and guidance to be independent and productive.

The microcomputer introduction program described above was started approximately seven months ago and has been progressing quite well. The stages of the user learning curve beyond fitting/integration — namely escalation, boundary realization and improved user/DP relations — are currently being supported only in a very preliminary way. Progress in these stages will be assessed later.

End-User Division

In order to accommodate different managerial styles, the director of an end-user division in a large Midwestern manufacturing company has chosen his projects carefully and implements them on a small scale before "rolling them out" to other divisions across the country.

Typically, under his leadership, microcomputer projects begin in a research and development mode. For instance, in order to develop an improved sales-tracking system, he recently identified four sales staff members to pilot the development of a micro-mainframe network. The project will take place over a six-month period under closely supervised and monitored conditions. The users will meet monthly to discuss issues and problems and to work with DP staff to plan for mainframe data

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This director of end-user computing has incorporated the learning curve in all its stages throughout the pilot phase of the project. He hopes to reduce the risk of large-scale failure or users getting "stuck" at a middle stage. Users participating in this pilot will not be deprived of moving through the early stages of the user learning curve. Acquaintance, language acquisition, experimentation, fitting and integration will be supported throughout by the monthly education programs as well as through ongoing, one-on-one support provided by end-user staff.

At the end of the six-month pilot, the director will be in a position to launch a technology program for merging business strategy with microcomputers. He plans to assist more than 200 new users on the sales staff with this program. The problems that surface during the pilot will have been addressed and a plan for accessing the company's data base will have been cooperatively worked out with the DP staff.

The pilot may become part of the ongoing end-user educational program which the end-user division sponsors for senior management. Effective integration and fitting of the new "sales microcomputer" network into the overall corporate business plans will be achieved through presentations made by sales staff to senior management.

The new microcomputer sales program by then will have become part of the menu of technology applications that managers throughout the organization will be able to implement as they address long-range corporate business objectives.

This approach to stimulating user development and microcomputer applications in a large corporation requires careful planning, research and technical support. It incorporates a full appreciation for the time required to learn and the long-term consequences for achieving major productivity objectives.

Organizational Implications

Microcomputer implementation in any organization requires changes for both the DP staff and line man-

agement. Although the demand for productivity tools in today's management environment is high, effective processes for implementing the tools are in short supply.

The options open to an organization in addressing microcomputer demand are basically four:

1. Ignore the demand.
2. Allow existing rules and procedures regarding computer acquisition and applications development to guide micro implementations.

3. Develop a policy and procedures for assisting micro users in selecting hardware and software, in learning how to use selected software packages and in designing training programs.

4. Establish processes for integrating microcomputer implementation with critical business strategy and application.

The first two options are destined for failure because they do not take the user learning curve into account.

The third option is a rational, solid approach to introducing micros in organizations. It is put into practice through an information center/micro shops concept and in a variety of workshops and educational events. It focuses upon the early stages of user learning.

The third option is distinguished from the fourth, however, in that it is not proactive. In other words, DP staff members do not take an active role in seeking out new users or in

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Microcomputers And Productivity

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differentiating computer skills among their users. Without this clear assessment of the "user pool," it is unlikely that the DP staff will be able to manage microcomputer implementation as an ongoing process. The consequences or risks, in this instance, are the following:

1. Initial enthusiasm for microcomputer applications, followed by disappointment, lack of use or frustration.

2. Sporadic and isolated imple-

mentation efforts throughout the organization.

3. A prevailing perception among users that DP wants to control the acquisition process — to restrict applications and learning rather than support it.

4. Mismatch of user expectations with technical support.

5. Attempts to go around DP to purchase, implement and train functional users.

6. Missed opportunities; the po-

tential productivity gains do not materialize.

Emphasis on Integration

The fourth approach fully recognizes the stages of the learning process in that the organization takes active steps to support users in all stages. In particular, the critical stage of fitting/integration is heavily supported and education programs emphasizing the business application of micros are established. Management

consultants are sometimes provided. The entire program is a collaborative effort — DP with users.

In organizations that have encouraged microcomputer use, the effects may not be apparent for up to five years or more. Users often tend to "fall off" the curve, according to reports from some companies. Managers unfamiliar with the microcomputer technology are asking serious questions about the value added by such technology. Some feel the learning requirements so far outweigh any benefits that they will leave the technology to the "Pepsi generation" of micro users.

Because many DP staff members themselves are not familiar with micros, they do not understand the learning requirements for managers. In a recent poll by Louis Harris and Associates for *Business Week*, 85% of the middle managers responding reported that computer-generated data is essential to their jobs and 91% stated that computer access increases their own productivity. However, of those polled, only 55% had taken any formal computer training on their own or through their company.

Learning must be regarded as the adaptation of the individual to a changing environment. The recognition and support of a microcomputer user learning curve should result in better quality applications, a meaningful integration of microcomputers into work structures, a modification of work structures and a smoother transition into a computerized organization.

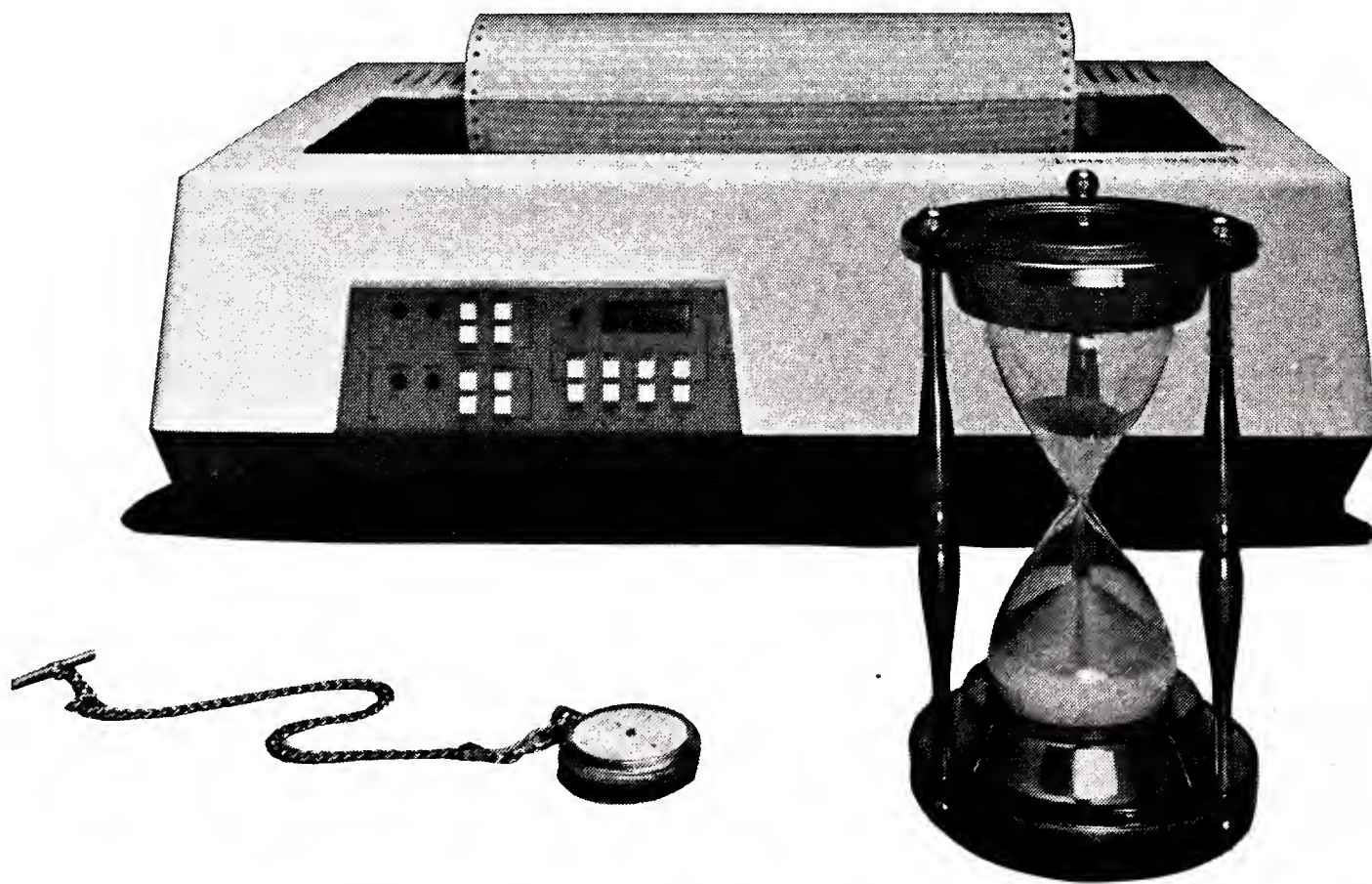
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Thomas J. Gambino is executive vice-president of Micro Mainframe, Inc. in Cambridge, Mass. He concentrates on the design and implementation of decision support systems.

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Diane D. Wilson is a doctoral student at Harvard University, specializing in the design and evaluation of processes by which organizations assimilate new information technologies.

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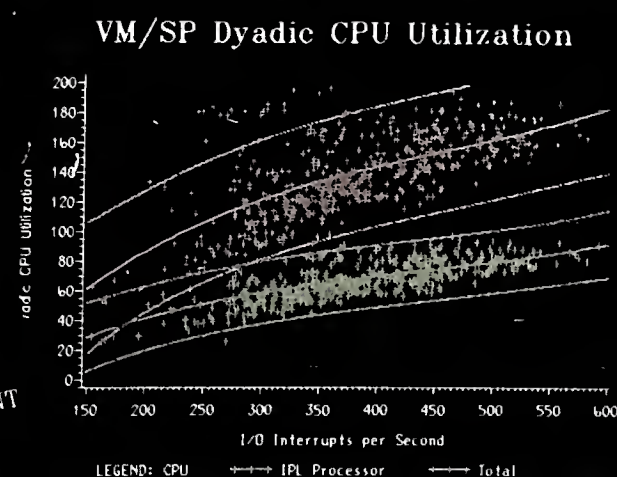
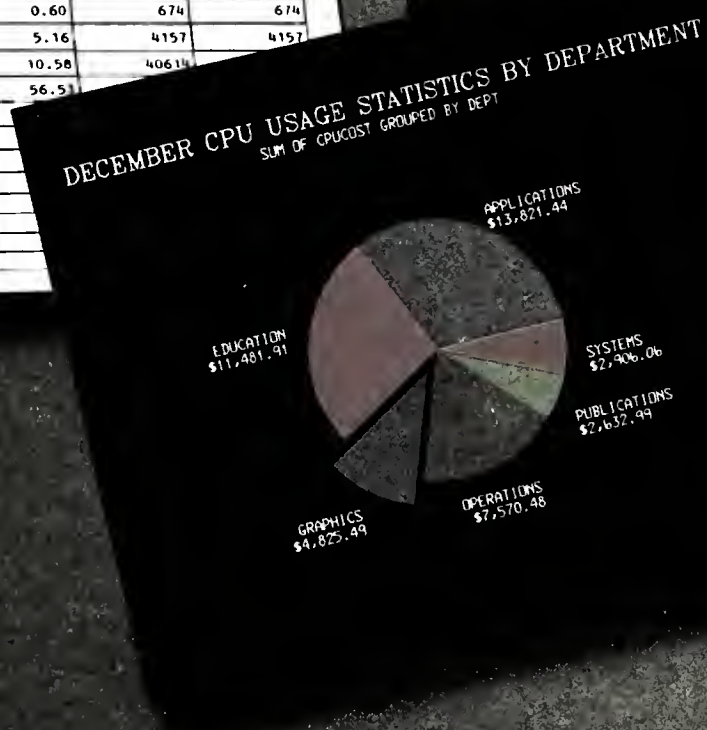
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PROGRAM	JOB NAME	CPU TIME IN SECONDS			I/O COUNT	
		NUMBER OF EXECUTIONS	SUM	MEAN	SUM	MEAN
OSERV	OSERV	1	2.88	2.88	311	311
	RESTORY3	1	0.72	0.72	1499	1499
DTSANALS	ICCFICIS	9	110.44	12.27	34596	3844
DTSINIT	ICCFICIS	4	364.80	91.20	52773	13193
DTSUTIL	ZAPOMVS	9	4.49	0.50	3227	359
LNKEOT	LETSFBTR	3	4.15	1.38	1479	493
	LINKDSN	2	0.88	0.44	708	354
	LINKFBRA	1	2.30	2.30	650	650
	LINKMATR	6	10.76	1.79	7072	1179
OBJMAINT	DRRZAPS	1	0.36	0.36	403	403
POZAP	DRRZAP	1	0.60	0.60	674	674
PLIOPT	BRANKS	1	5.16	5.16	4157	4157
	MATRIX10	5	52.92	10.58	40618	8123
POWERJA	POWER/VSE	4	226.12	56.53		
RESTORE	RESTORY3	1	2.36	2.36		
	SASLOAD	1	0.28	0.28		
RSERV	LETSFBTR	4	6.23	1.56		
	LINKFBRA	1	4.53	4.53		
SABVSE	ACCTEST1	3	20.35	6.78		
	ACCTEST2	8	81.44	10.18		
	ACCTEST3	1	13.81	13.81		
	ACCTEST4	4	73.36	18.34		



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EDITORIAL

Putting an End to Big Brother

We hear a lot these days about Big Brother and the coming of 1984. The specter of our society becoming enslaved through high technology and constant surveillance is as overstated today as it was 40 years ago when George Orwell wrote his bleak portrait of a negative utopia. However, this opinion is becoming increasingly difficult to maintain in the face of recent Reagan administration and congressional actions.

It is bad enough that Congress is rushing willy-nilly toward establishment of a workers' ID system in the name of immigration reform, a system that promises to be a national ID card backed by hundreds of millions of dollars worth of record-keeping computers. What is worse is the recent creation by the Federal Bureau of Investigation of an electronic surveillance system in its National Crime Information Center [CW, May 23].

In the name of protecting the President and other high-level U.S. officials, the FBI will administer an electronic file to help the Secret Service track the whereabouts and activities of those it has judged possibly dangerous. The bureau has taken this step, which carries the chilling precedent of turning its record-exchange NCIC system into a surveillance system, despite the fact that the Secret Service claims the system will be only marginally helpful in its protective task and despite the concerns of a congressional oversight panel.

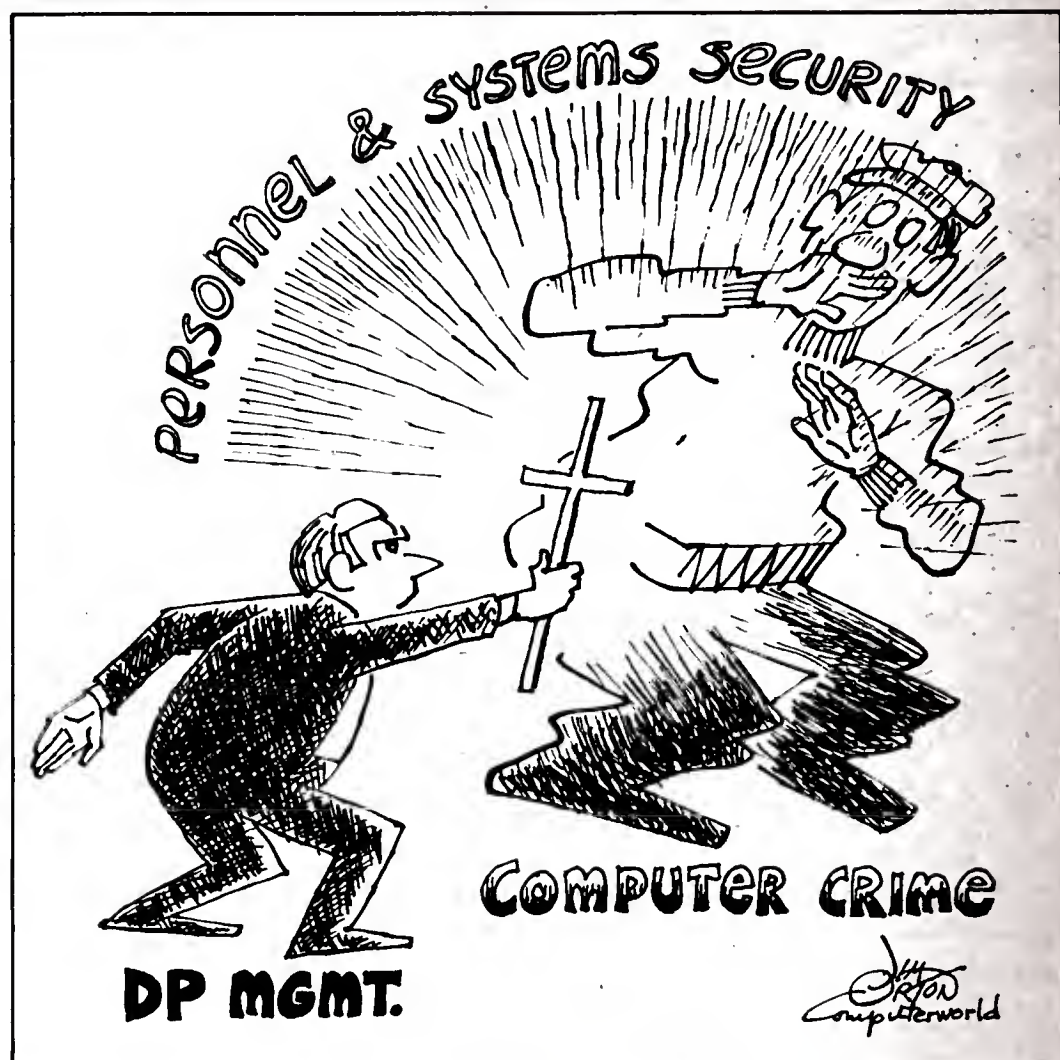
The House Judiciary Subcommittee on Civil and Constitutional Rights declared this system use illegal and asked the FBI to cooperate in developing statutory guidelines which, despite that finding, would actually have allowed the system to proceed — although with heightened congressional scrutiny. The FBI, which at least in public makes a great show of abiding by congressional oversight, thumbed its nose at the subcommittee and put the system on-line.

By refusing to be bound by any direction from the congressional panel charged with overseeing its activities, the bureau has become, in effect, a rogue agency. Congress should immediately act to stop the Secret Service system. Failing that, it should at least institute statutory guidelines restricting its operations and preventing its expansion.

Unfortunately, the likelihood of Congress shouldering its responsibilities in this area is slim indeed. When the matter came up before the full Judiciary Committee, its members spurned the advice of the subcommittee, which is charged with handling these matters, and gave the new system the committee's blessing.

When Congress gives in to this kind of thinking, throws up its hands and refuses to exercise its oversight function, it is scary indeed.

We would like to put an end to all this talk about Big Brother and the threat of high technology. A lot of this noise is coming from Capitol Hill, where politicians of all stripes are making political hay from this topic. Their time could better be spent cleaning their own house.



The Exorcist

LETTERS

Security and the NSA

"Radio Waves From Your System Giving Away Your Secrets?" [CW, May 9] was a fair presentation of opposing views on the relative importance to data security of the potential for illicit intercept of information-bearing emanations. Nevertheless, some further elaboration might be helpful.

First, I believe there to be no significant disagreement as to the technical feasibility of intercepting emanations from certain serial-by-bit devices, including some CRT terminals and a particular low-speed printing mechanism, when the distance between the intruder's antenna and the source is quite small.

If there is a potential for loss of data in this manner, and that possibility is very small, physical control over a reasonable radius so as to prevent the installation and use of a nontrivial amount of hardware by the intruder will usually contain the problem.

It is wholly appropriate that the National Security Administration (NSA) be concerned about the potential for the loss of information through emanation intercept. However, its tendency to overstate grossly the potential for security problems of all kinds seriously impairs its credibility and discourages those who might otherwise be willing to cooperate with the agency.

The agency's lack of concern for accuracy in describing potential problems actually works against its professed goal of achieving greater security in computer-based systems. An example is its insistence that information can be extracted from the emanations of large-scale mainframes and immediately attached peripherals.

The NSA would find the major vendors far more willing to consider

very expensive design changes to reduce emanation levels from central system components if just once it would demonstrate the capability for acquiring information in this manner.

I readily agree that the NSA should not demonstrate how it does it, if it can, but I see no reason why it should not be willing to have an impartial group operate, for example, a reasonably full IBM 3033 configuration while the agency, with as many trucks full of gear as it may want parked outside and totally obvious, intercepts emanations, processes them and brings the resulting yield in for comparison with the data processed in the system.

If the NSA will conduct this modest demonstration, many doubters, including this writer, will surely be converted to its cause and join those urging the vendors of hardware to show greater concern for eavesdropping on its hardware.

While we continue to wait for this demonstration, which I have proposed to the NSA several times over the past dozen or more years, I urge people that rather than sitting around worrying about interception of information-bearing emanations, remember the years of urging by the intelligence community that we burn magnetic tape and physically destroy disks on which classified data had been recorded — "because once something has been recorded on magnetic media it can never be fully erased."

Former President Richard Nixon's 18½ minutes of unreadable tape seriously eroded that myth. Now it is time that we reduce this successor myth to its proper size.

Let's have the demonstration.

Robert H. Courtney Jr.
President

Robert Courtney, Inc.
Port Ewen, N.J.

DATA PAST

Five Years Ago May 29, 1978

ANAHEIM, Calif. — The 1978 National Computer Conference was set to open here for a period of four days.

The conference was expected to attract a record-setting audience of more than 40,000.

Ten Years Ago May 30, 1973

TULSA, Okla. — Action on the IBM counterclaim to Telex Computer Products, Inc.'s \$1.2 billion antitrust suit continued here with Telex rebutting charges that it hired IBM engineers to steal trade-secret information from the firm.

LECHT ON SCIENCE/Charles P. Lecht

U.S. vs. IBM: A Microcosm of a Legal Mess

The juxtaposition of certain current and past events can lead us to an increased appreciation of the kind and magnitude of mess into which lawyers without suitable technical qualifications can plunge DP manufacturers and users and governmental agencies in this electronic age.

Most such practitioners of law seem inclined to think that preelectronic precedents have clear and inevitable application to present, technically determined issues of contention, and that even the most fundamental basis for a lawsuit — namely, the object under dispute — is of relative unimportance and need have very little bearing on the outcome.

Cynicism of this sort, routinely exhibited by certain members of our legal community, is so totally out of sync with the facts that I fear the progress we all believe possible through our technology is being subverted or impeded by increasing litigation

This is the second part of a two-part series on DP lawyers.

over the very fact of its happening.

That our government dropped its lawsuit against IBM after 13 years of intensive preparations provides us with an example of lawyers run amok on a scale without precedent in our business.

Can you imagine how intense the "buck stops here" pressures on our Justice Department chief must have been in order for him to have allowed his staff to initiate litigation aimed at righting the alleged wrongs of the most powerful science company the world has ever known? Is it not astounding that our Justice Department, woefully short of Nobel laureate scientists and astute businessmen, saddled with antiquated internal technological support and circumscribed in its scope of opera-

tions by having to live its life in a political fishbowl, should have reached the conclusion that it had a real chance of proving its point in so unequal a battle?

Up against a force of such power and influence that most of the world's computing depended (and continues to depend) on it; a force capable of sustaining \$4 billion dollars' growth a year while consistently realizing over 20% profit; a force rated No. 1 among all U.S. corporations for expansion from within (as opposed to by means of acquisition); a force with access to such analytical power that it decided to withdraw from doing business in Iran long before the U.S. government had the least inkling of what was up; I am led to wonder about the facts out of which our government was able to summon up a belief that it could win in such a confrontation.

In view of the case's conclusion, the bottom line of its actions could

only charitably be thought of as an intelligent error.

Constrained by the exaltation of his throne, upon whose dignity he is so nobly impaled, it is hard to imagine the typical Justice Department chief acting on anything, except through the advice and counsel of his subordinates. They, in turn, must proceed in similar fashion, down through the hierarchy until that metamorphosing organizational layer is at last reached where mere data is translated into human response.

In regulatory watchdog entities, that particular layer might accurately be styled the lowest "lawyer layer." It gives one pause: Who actually concluded that it was both fitting and intelligent to attack the formidable power of IBM — at once wrapped in a cocoon of computer technology and generating that same technology as its principal end product? IBM represented an order of probative antitrust activity never before addressed by the Justice Department monolith, in terms of the defendant's private sector wealth and natural and artificial intelligence resources.

'Dungeons-And-Dragons Sequence'

In my mind's eye, this evokes the image of a duel between two mythical creatures in a dungeons-and-dragons sequence. One is equipped with the armor and shield of a 15th century knight (our trusty institutional champion of Justice); the other is a 21st century nuclear-powered artificial strength and intelligence engine.

Spurred on by the inflammatory and highly vocal misconceptions of his advisers, our knight, his gorge ever rising, himself initiates the battle. He is at once engulfed by an electronic net that deploys a set of holographic decoys, whose effect is to keep him embroiled in an arid, 13-year-long quest for something real at which to strike.

Sustained in his battle against the illusions and projections of his enemy — and it must be his enemy, his attorneys tell him so — by taxpayer/serf dollars, our champion clanks and creaks his way home at last, having long since forgotten what precisely he was doing or why he left in the first place. He removes his mailed glove, shakes hands with him who had been called his adversary and sinks into a sleep not unlike coma.

I have reason to believe that the cost to IBM of defending itself against antitrust lawsuits must have been between \$15 and \$20 million dollars per year during the period when it was under attack by the Justice Department. While perhaps a third of this was spent on the Justice Department assault alone, it is hard to separate out the costs of additional antitrust actions against IBM that arose as a result of its presumed weakened posture in the face of the original Justice Department suit.

Great time to sue! As only God knows the sums of money and time spent by the group of companies suing IBM for anticompetitive reasons

(Continued on Page 46)

HUMAN CONNECTION/Jack Stone†

Successful Marketing of Micros Demands Effective Training, Support Programs

Time magazine, in its May 16, 1983 issue, reported on several daring programs of literacy training for executives of some large corporations that emphasized hands-on exercises at the consoles of personal computers.

The results? Taking an optimistic view, about a fifth of the attendees continued using the machines at their desks. But on the pessimistic side, around 80% ignored the computers after the class ended.

I don't know how you read it, but I'll wager dollars to doughnuts that many within the latter group of executives have been turned off from the subject of computers for years to come. And I'll further bet that one of the major problems with the program was not its content as much as the lack of follow-up systems support with the executives to make sure they were applying the micros correctly.

A postmortem of the program would probably be useful at some point in the future, but for the time being, I only want to proffer some general advice about the planning for such executive training. It is presented here not as a revelation, but as a timely restatement of one of the axioms of our business: Effective training of executives depends upon a carefully crafted plan for development, implementation and follow-up — worked out between the executives and the instructional/computer staff — to meet a validated set of user needs.

It is of little importance what class of machine we're talking about, a \$1 million mainframe or a \$100 home brew, the axiom is valid. And if the truth be known, the axiom applies to any level of new user.

One indicator of how closely suppliers of computer services are fol-

lowing this axiom is a sampling of the support philosophies currently embraced in the computer retailing business. Now that the annual revenues from personal computers have exceeded those of the minis and are breathing down the tail pipe of mainframe revenues, marketing practices within this segment of the industry augur for the future, for good or for evil.

A Personal Visit

Take, for example, the Computer Center at the Famous-Barr department store in St. Louis. When I visited there a few weeks ago, I found a class operation that markets a half dozen of the most popular personal computer systems. One of its spokesmen stated that the staff prides itself on the center's education and follow-up support program. He estimated that within about four months after machine acquisition, nearly 80% of the center's clients are self-sufficient.

Furthermore, he stated that the center dropped the merchandising of the small home computers (for example, the Atari Corp. 400) for several reasons. First of all, almost the same amount of time and effort was required to sell, train for and support a small machine as was required for an IBM Personal Computer at twenty times the price. Second of all, the center was not receiving the type of support it needed from the vendors of the small home computers.

As a case in point, the center staff was particularly aggravated by the delinquencies on the part of the suppliers in returning promotional rebates to buyers.irate customers were coming to the center to vent their spleen, even though the center was not involved in the rebate process.

Having been encouraged about

how one major retailer is addressing user support — albeit at the level of the business-oriented personal computer — I thought it useful to check out what independent vendors of the homespun machines were doing for their users.

I knew it was going to be a long day after I checked the St. Louis Yellow Pages. There was not a single entry under "computers" for the Texas, Instrument, Inc. or Atari brands, and the Commodore Business Machines, Inc. entry asked the reader to check the vendor's ad under "cash registers." So I contacted the local hobbyist underground and was advised: "Hey, man, it's the Children's Palace. Far out!"

It was far out, all right, about an hour from Gateway Arch. The Children's Palace was a huge toy supermarket, but its management had obviously recognized the value of the computer: The home machines were located only a hop, skip and a jump away from the cash register — just beyond the inflated balloons, the wooden play-blocks packages and the pinwheel displays.

Although no one was around, I began my systems testing anyway, but couldn't get too far because the displays were not hooked up.

The store manager stated during my interview that the policy at Children's Palace was full user support. There was a wall-to-ceiling library of prepackaged game cartridges, which did not need documentation. There was also a barely legible list of Basic courses available from an independent trainer crosstown — "if you really want to learn the whole programming to-do, but I wouldn't advise it," the manager said.

I had to stop and ask myself: Is this where the industry is heading?

Justice and the World's Computer Giant

(Continued from Page 45)

during the Justice Department action, so I suspect that only He knows whether the outcome of these suits might not have been different had IBM not been forced to assume an angelic image during the 13-year period.

In each case, no matter what its merits, swift resolution must have seemed preferable to victory if the impact of winning might reveal

IBM as a truly operational cyborg at war with a company less than, say, 5% its size, as it claimed the Justice Department's charges to be false.

Now, I'm not saying there wasn't merit in any of these suits against IBM, that IBM itself could not have inspired some or that the event of each was necessarily wanted by any party involved.

What I am saying is that the Justice Department's de-

termination that its own case was without merit represents conclusive evidence in at least one instance that IBM was being wrongly sued and that we shouldn't be too surprised if at least one other suit had little chance of winning except against IBM under Justice Department pressure. That it was compelled to fight over 10 antitrust suits during the Justice Department action certainly

gives us reason to suspect that some of them were inspired by lawyers up to no good.

And it would be difficult indeed to avoid reaching the conclusion that legal ineptitude was at the root of the entire fiasco. A mistake is a mistake; a lawyer-driven mistake of this magnitude, however, is an event with which the long-suffering English language has yet to

catch up.

It was surely the lawyers who advised their client, namely, our government, to sue, and thus to cause untold sums of money to be spent (and I mean literally untold, since neither IBM nor the Justice Department has ever officially acknowledged the exact size of the bills involved).

And it was surely they who caused the years to be frittered away for reasons none of us seem to remember. The lawyers who caused this gargantuan mess lost nothing themselves and were never cited for irresponsibility or ineptitude. On the contrary, the legal establishment sought to leave the impression that something worthwhile had been achieved by this suit against our industry flagship, and that somehow, some good came of it.

Having bought this dubious fiction for a fact, we were given the perfectly natural follow-up explanation that "no further good" could be achieved by continuing to prosecute and that therefore the case should be dropped. I, for one, would like to know precisely what good was accomplished by this epic shoveling of time, energy and money into the bottomless mew of legal incompetence and, possibly, greed. Can anybody distill the principle upheld, in any number of words?

Even dead fish float in a churning sea, we are told, and if anything confirms this, it is the number of otherwise incompetent lawyers bobbing on the surface of our field.

Lecht is president of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies.

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End-User Computing Facility Aids Insurer

NEW YORK — Although a life insurance company here welcomed the advent of on-line decision support systems, its management was wary of placing end users in a potentially unstructured environment.

Lee P. Mulvihill, assistant vice-president of The Equitable Life Assurance Society of the U.S. here, said, "We were fortunate in recognizing the absolute necessity of providing a facility to guide the user smoothly, with a minimal need to learn technology. We call this facility the 'Manager's Workbench.'"

When Equitable first began experimenting in the realm of the information center and end-user computing, the prospect of building a manager's

"The [Workbench] software is deliberately very tolerant and forgiving. It expects mistakes and second thoughts and engages in a dialogue which encourages the end user to relax and use the computer without intimidation."

workbench facility was discussed. "At the time we called it 'the harness,'" Mulvihill explained, describing it as a common front end to all end-user computing by means of a standard set of display screens at the terminal. Software Corp. of America (SCA) was contracted to develop this facility. During

1980 and 1981, this firm had developed a set of programmer aids for Equitable called the (IBM) VM programmer's workbench. "This along with SCA's extensive knowledge of [IBM] CMS led us to choose them for the development of the Manager's Workbench," he noted.

According to Mulvihill, "the product of this joint development has been used in virtually every decision support computing application here in the securities operations area of Equitable." The Manager's Workbench enables users to catalog and access standard reports simply and directly. The end user does not need to know the query language, and the intricacies of the operating system and the communications link to the

(Continued on Page 52)

'JCLcheck' Update Tests JCL Codes

SAN JOSE, Calif. — Triangle Software Co. has announced Release 4.0 of JCLcheck, a utility for IBM OS/VS and VM/CMS operating systems, which is said to add the ability to test JCL condition codes for validation, as well as to report on how efficiently data sets are utilizing disk space.

JCLcheck detects and diagnoses all JCL errors in a job stream before submission for test or production runs, a spokesman said. The release tests the validity of condition code JCL by simulating the execution or skipping of steps according to the condition codes specified on the JOB or EXEC statement.

JCLcheck also reports on how efficiently data sets use disk space. Whenever a current data set is referenced by a job, the utility identifies wasted disk space by reporting how much disk space the data set uses and how much it actually occupies.

The release also expands JCLcheck's checking of control statements to IBM's Idcams utility and includes interfaces to University Computing Co.'s UCC-ONE, Pansophic Systems, Inc.'s Panexec and Applied Data Research, Inc.'s Librarian.

The package is priced at \$15,500 from Triangle Software, located at Suite 108, 4340 Stevens Creek Blvd., San Jose, Calif. 95129.

'Quick-Fetch' Said to Relieve IBM MVS Storage Constraints

PITTSBURGH, Pa. — Duquesne Systems, Inc. has announced a product said to improve the response time and relieve memory storage constraints of IBM MVS operating systems.

Called Quick-Fetch, the product optimizes the part of the operating system which services requests to locate and load programs from direct-access storage devices into virtual storage, the vendor said.

The Quick-Fetch package is reportedly designed to seek and identify the most actively fetched program modules and load them into a managed area of virtual storage in the Quick-Fetch address space. Future fetch requests for those modules are then directed to this managed area and are filled by a storage-to-storage transfer process.

The package relieves virtual storage constraints by increasing the system's available common storage area without causing system degradation, the spokesman pointed out. Link pack area modules — which are characterized with low or moderate activity — can be transferred from the link pack area to a link list library. Once there, the information can reportedly be managed by Quick-Fetch.

The package costs \$9,000. However, the firm is presently offering the software at an introductory price of \$6,000. This pro-

gram is in effect until July 31.

DSI is headquartered at Two Allegheny Center, Pittsburgh, Pa. 15212.

Astco Enhances 'Astute' Utility

PALO ALTO, Calif. — Astco has announced Release 2.0 of its Astute catalog, direct-access storage device and data set processing utility and productivity aid.

Astute can be run from TSO, structured programming facility, batch and an operator console and will run in any IBM OS environment. Data set and catalog management enhancements are said to include index Vtoc support, data set compress and release operations, improved preprocessing and selection and a catalog copy facility.

Astute reportedly can perform a number of actions with one pass over a user-specified pattern of Vtocs. The actions can be based on the most complete user-specified selection facility available, including data set and volume name patterning.

Available free for a 45-day trial period, the software costs \$7,000 for the first CPU from 926 Amarillo Ave., Palo Alto, Calif. 94301.

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Both Batch, On-Line Versions

IBM-Compatible Analyzer Boosted

NORWALK, Conn. — Release 6.1 of both the batch and on-line versions of TSI International's Data Analyzer and Audit Analyzer for IBM and plug-compatible mainframes running under OS and DOS has been announced.

The Data Analyzer is an information retrieval analysis and presentation system. The Audit Analyzer is an

electronic data processing audit system.

The current release for both packages is said to contain enhancements to the automatic library function, the CICS and IMS/DC on-line features. The library function will now reportedly provide users with new facilities for dealing with alphabetic character manipulations, substitution and

conversion to numeric data.

The IBM IMS/DC on-line system for both packages has reportedly been enhanced to operate in a VSI environment and uses two alternate indexes within its data base. The request submittal screen has been adapted to assist non-technicians with JCL options, the vendor said.

The Standard system of the data analyzer sells for \$22,000 under DOS and \$26,000 under OS. The Basic system sells for \$14,000 under DOS and \$18,000 under OS. The audit analyzer sells for \$19,500 under both DOS and OS. More information is available from the vendor at 50 Washington St., Norwalk, Conn. 06854.

USENIX

1983 Summer Conference, July 12-15, 1983,
 Toronto, Canada



The 1983 Summer Conference of the USENIX Association and Software Tools Users Group will be held in Toronto, Canada July 12-15, 1983 at the Harbour Castle Hilton. This announcement provides information about the dates of events, as well as who to contact for further information. A pre-registration packet will be mailed on request including both conference and hotel registration forms.

USENIX Technical Sessions—July 13-15, 1983

Session topics include UNIX* programming tools, networks, graphics, applications, languages, hardware, word processing, etc.

Invited speakers and panel discussions will round out the program.

Software Tools Users Group Meeting—July 12, 1983

This meeting's topics will include enhancements, standardization and consolidation of all the various implementations into a compatible system.

UNIX* Tutorials—July 12, 1983

More specific information on Tutorials is included in the pre-registration packet. Past subjects have included introduction to UNIX* text processing and documentation and basics of writing UNIX* Device Drivers and 4.2 BSD.

Vendor Exhibits—July 12-14, 1983

A vendor exhibition will be held at the Harbour Castle Hilton on July 12-14, 1983. The key companies in the UNIX* industry will display new products.

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Hibol Tool Updated For Cobol

EDEN PRAIRIE, Minn. — Delphi Data Systems, Inc. has released a new version of its Hibol productivity package for Cobol programmers working on IBM 370 and compatible hardware running under the DOS and OS operating systems with CICS.

A 60-statement Hibol program typically results in an 800-statement Cobol program and the automatic generation of CICS screen maps plus documentation, a spokesman said. Hibol has been enhanced to include on-line/interactive functions including dynamic menu controls, security, operator help/assist and data dictionary.

In addition, the software's menu/security system provides controls by user, department, password and terminal, the spokesman pointed out.

On-line programs can include menus, file maintenance and file inquiries with a single program handling multiple screens and files. Batch programs can process multiple files and produce multiple reports.

The generated programs are ready to compile, the spokesman said.

Hibol can generate images of screens/reports with descriptions of the accompanying data elements. The information can be automatically merged with user-written material to produce documentation.

The DOS version costs \$19,995 with the OS version priced at \$24,995. Delphi Data Systems is located at 9905 Hamilton Road, Eden Prairie, Minn. 55344.

M. Bryce Unveils Addition To Its Pride-ASDM Family

CINCINNATI — M. Bryce & Associates, Inc. has announced an addition to its Pride-Automated System Design Methodology (ASDM) product line.

Called Project Management Command & Control 2 (PMC2), the product is an automated extension of the Pride-ASDM project management system. It includes features for planning, estimating, scheduling, reporting and controlling project activities, a spokesman said.

PMC2 controls systems development activities, verifying that the ASDM method is being followed without depending on verbal confirmation. The product is said to help prevent the staff from circumventing accurate reporting.

The package consists of features for project planning, project impact

analysis, preparing estimates and schedules, resource allocation, preparing assignments, time reporting, user chargeback, querying project information, skills inventory, project status reporting and maintaining and controlling the project data base, the spokesman said.

Written in Ansi Cobol, the software initially will be available on IBM OS, Honeywell, Inc. Gcos, Hewlett-Packard Co. HP 3000 and Digital Equipment Corp. VAX-11 systems. The price is \$30,000 with availability scheduled for the fall. Pride-ASDM costs \$80,000, the spokesman said from 1248 Springfield Pike, Cincinnati, Ohio 45215.

ADR will make two major announcements in the next several months covering:

1. ADR's mainframe software and the Personal Computer.
2. A major software product to dramatically reduce the applications backlog.

The importance of these announcements will be directly disproportionate to the size of this ad.

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DBMS Released For VAX Users

CAMBRIDGE, Mass. — Software House, Inc. has unveiled a relational data base management system (DBMS) for Digital Equipment Corp. VAX-11 computers running under the VMS operating system.

System 1032 reportedly employs an inverted file structure for fast retrievals; a built-in, block-structured programming language for quick applications development; asynchronous I/O for efficient resource utilization; and a host language interface for Cobol, Fortran, Basic, Macro, C, PL/I and Pascal applications programmers.

Experienced programmers can control efficient queries, updates and output using an integrated structure of commands and system options. Novices are aided by a scheme of system defaults, flexible command entry and on-line user assistance, the vendor said.

Features include flexible relationships, fast data retrieval and total control for programmers, according to the vendor.

A typical System 1032 license for the VAX-11/780 costs \$40,000, Software House said from 1105 Mass. Ave., Cambridge, Mass. 02138.

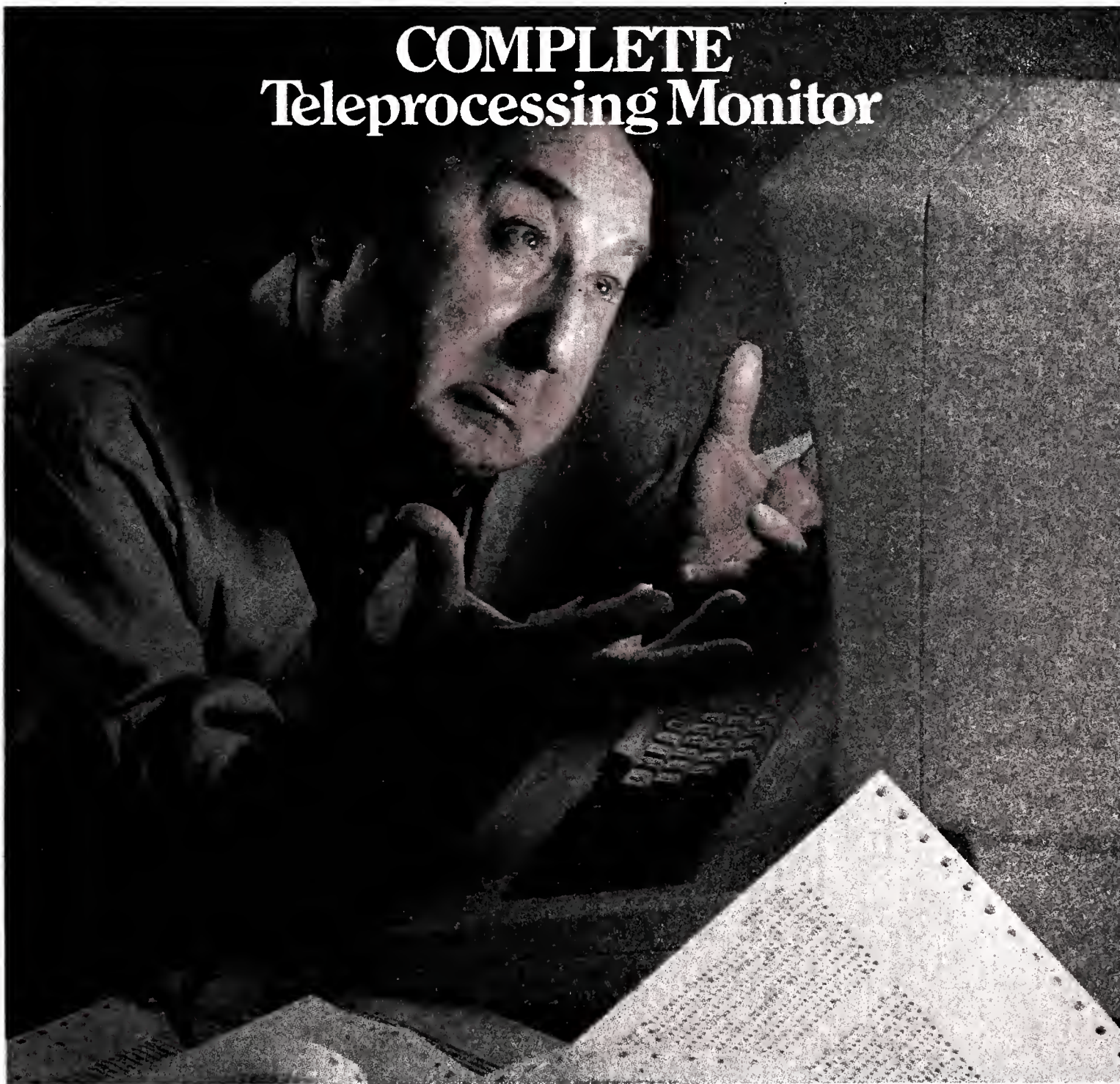
Fortran Compiler Added to Supra

KANSAS CITY, Mo. — United Information Services, Inc. (UIS) has announced that a Cray Research, Inc. Cray-1 Fortran compiler (CFT 1.10) is available on its Supra batch service based on a Cray-1 computer.

CFT 1.10 conforms to the Fortran 77 standard and accepts most of the older Ansi X3.0-1066 syntax, a spokesman said. The new Fortran 77 features include character data type and generic functions.

UIS maintains service operations in the U.S., Canada and the UK with major data centers located in Kansas City, Mo., Pittsburgh, Pa., and London. Prices for the Fortran compiler are based on usage through UIS, P.O. Box 8551, Kansas City, Mo. 64114.

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The very word "teleprocessing" has the ring of urgency, a tool to provide quick response in a dynamic data processing environment. So why do most TP monitors available for IBM 4300 and 370 systems take up to 2 years to develop an application and several weeks to make even minor changes? One reason is that some systems don't support online interactive development. Some have such a complex operating system interface that only the most experienced system programmers can communicate with the system. And some force you to waste time and computer resources using separate development and production systems because they don't offer a comprehensive storage protection scheme.

COM-LETE from Software AG is

attuned to the real-world needs of teleprocessing users. Those applications that take as long as 10 to 20 months to develop with other systems can be finished in 1 to 2 months with COM-LETE. Highly specialized programmers aren't required because COM-LETE is user friendly and operating system independent. Also, built-in storage protection means you can handle development and production on the same system.

If you're getting nowhere fast with a conventional TP monitor, or are evaluating alternatives for a new 4300, consider the COM-LETE alternative from Software AG.

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are recompiled from programs that are already running on our System/34; others are the new system's own software, including office applications like text management, spelling check, local electronic mail and color graphics.

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Allows DPS 6 Compatibility Processor Targets Liberator

SAN JOSE, Calif. — Western Business Computers, Inc. has released a command processor which allows its Liberator operating system to run on Honeywell, Inc. DPS 6 minicomputers under the

Gcos 6 Mod 400 operating system.

Liberator I transports field-tested application programs originally written in QIBasic for Qantel Corp. systems onto Honeywell and

permits them to coexist with resident programs written in any other language, a spokesman said. The operating system allows DPS 6 users to run other software from Western, including the Maxpro library of off-the-shelf business applications.

The operating system costs \$15,000 from Suite 220, 2025 Gateway Place, San Jose, Calif. 95110.

Insurer Reaps Benefits With End-User Facility

(Continued from Page 47)

host computer are reduced to a log-on procedure. "From that point the user is truly able to 'wing it' by straightforwardly answering the questions and selecting the options presented by the Manager's Workbench," he added.

New reports can be created on the spot by stepping through the questions posed by the workbench. The facility's screens help and prompt the user to complete the job. "The software is deliberately very tolerant and forgiving. It expects mistakes and second thoughts and engages in a dialogue which encourages the end user to relax and use the computer without intimidation," Mulvihill asserted.

Equitable's first use of the workbench was in conjunction with an information system the firm had developed for the public bond and direct placement investment teams.

Before the workbench was integrated into this application, the information system was highly touted by the technical staff and shunned by the investing professionals. "Everyone agreed that the system could do virtually anything they might ask of it; however, a programmer, and one specially familiar with the system design, had to do the asking," he reported.

With the addition of the Manager's Workbench, the use of this system has changed dramatically, he continued. Approximately 60 investing, managerial and administrative personnel

have sought and received training. About a dozen of the investing professionals now regularly and routinely use the system as an integral tool in doing their jobs. The remaining people are occasional, sporadic users.

The absolute cornerstone of this success is the Manager's Workbench, according to Mulvihill. "One portfolio manager spoke for all in recounting how the workbench 'enabled me to work alone, at my own pace, where I could overcome the intimidation of the machine without being afraid of making a mistake in front of another person.'"

The most prominent success of the workbench has been in its use by Executive Vice-President Leo M. Walsh, who heads financial operations. After he volunteered to become "computer literate," Walsh was given access to virtually all of the on-line inquiry facilities in investment affairs. He has since become an astute, active user of the computer facility and has required a minimum of technical support.

'EMS' Offered On T/S Basis

BERKELEY, Calif. — Economic Sciences Corp. has announced the availability of its Economic Modeling System (EMS) corporate modeling and data management product on time-sharing through Cisinet Corp.

EMS is an application development program that integrates data management, financial and econometric modeling, report writing, forecasting techniques, a procedural language and graphics, a spokesman said.

EMS can integrate macroeconomic and microeconomic data from external and internal sources. International and domestic data bases, including forecast and historical data bases from Wharton Econometric Forecasting Associates, are accessible via EMS on time-sharing or in-house installations.

Charges vary depending on resources used from Economic Sciences at 2150 Shattuck Ave., Berkeley, Calif. 94704.

'Transact' Announced For Prime 50 Series

NATICK, Mass. — An on-line application generator and transaction processing system developed by Database Systems Corp. of Phoenix is available through the Prime Solutions program, Prime Computer, Inc. has announced.

Called Transact, the product runs on all Prime 50 series computers and is compatible with other Prime software. It reportedly supports development, maintenance and operation of transaction processing applications.

Transact supports all

file management system-like files interactively. Users can simultaneously input, update and manipulate data files, the spokeswoman said.

Transact is composed of Executive and Run modules. The Executive module is used to produce and administer transaction processors. The Run module forms the basis for specific transaction processors.

The product is priced at \$12,500 from Database at Suite 201, 1846 E. Camelback Road, Phoenix, Ariz. 85016.

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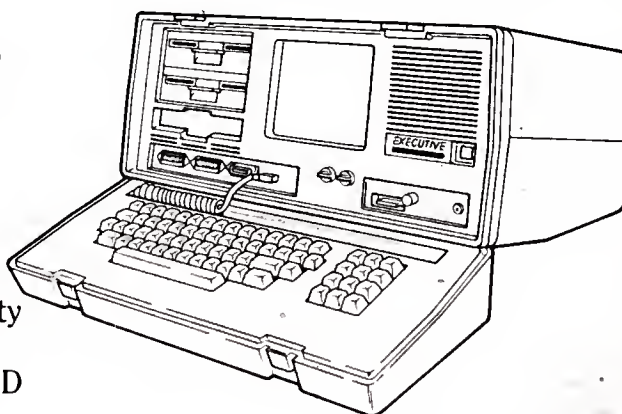
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Cellular Radio Opens Frontier Of Opportunity

By Katherine Hafner
CW Staff

Cellular radio, hailed as the mobile telephone of the future, is a vanguard in the telecommunications revolution.

For voice transmission via cellular radio, the market is a vast frontier of opportunity. In March 1982, the Federal Communications Commission (FCC) established rules for commercial operation of cellular radio and is currently in the process of reviewing and granting operating licenses.

Communications providers such as AT&T, MCI Communications Corp., GTE Corp. and Western Union are all investing in the cellular future. On the equipment supply side, Motorola, Inc., Fujitsu Ltd., Anaconda-Ericsson, Inc. and Northern Telecom, Inc. are also banking on what they see as the great promise of cellular radio.

The next year will certainly see cellular radio leave the conceptual realm and take root in people's automobiles. By 1990, cellular radio will be a \$4 billion industry, according to Jerry Lucas, president of Telestrategies, a McLean, Va.-based consulting firm specializing in telecommunications technology.

Cellular radio works by means of a series of cells with a radius of one to eight miles, each containing its own low-power transmitter and computer controller. Unlike existing mobile telephone networks, where a channel can handle only one call at a time, separate

(Continued on Page 58)

LM Ericsson Renames Firm, Announces Three Products

NEW YORK — In a bid to "compete with American Bell, IBM and other major firms" for the U.S. information and communications market, the Swedish telecommunications company, LM Ericsson, has announced three new products and has renamed its North American company, Anaconda-Ericsson, Inc.

The newly named firm, Ericsson, Inc., a joint venture of LM Ericsson and the Atlantic Richfield Co., will be responsible for the marketing and servicing of the new U.S. products, which include a software functional plug-compatible computer system, a computer-based bank branch system and a voice/data digital information-switching system.

Alfaskop 41, Ericsson's modular multi-function system, is a software plug-compatible system designed primarily for compatibility with IBM's 3270 Binary Synchronous Communications and the Sperry

Supports SNA/SDLC

Memorex Unveils Controller

CUPERTINO, Calif. — Memorex Corp. has introduced a cluster controller said to support IBM's Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC) communications protocol.

The Memorex 2074 is said to support the remote I/O operations of up to 32 devices with IBM Category A interfaces. It is functionally equivalent to models of the IBM 3274 remote cluster controller, a vendor spokesman said.

Corp. Uniscope system, the company said. It can be configured as a single workstation or as a multiterminal system interacting with host computers. The 41 can also perform its own IBM Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC), Sperry UTS and Digital Equipment Corp. VT100/50 emulations.

System modules include a communications processor, flexible disk units and terminals, each with its own microprocessor. The company noted that the independent microprocessor in each unit increases the ability for such tasks as on-line communications, word processing and personal computing.

The 41's communications processors include three models, two with 64K bytes of internal memory and one with 32K bytes of internal memory. Two models of the

(Continued on Page 56)

Harris Releases Enhancements To Its Family of DDP Systems

DALLAS — Harris Corp. has announced product enhancements to its entire line of distributed data processing (DDP) systems.

Harris DDP systems, the 1600 family and the Mind Series now include buffered synchronous and full-duplex support for IBM's Systems Network Architecture (SNA) emulation, according to a vendor spokesman.

Systems with this capability are said to have SNA line speeds up to 56K bit/sec in half-duplex or 19.2K bit/sec in full-duplex mode, the spokesman for the vendor maintained.

There is no extra charge for the SNA feature, and the spokesman said 56K bit/

sec and 19.2K bit/sec cost \$9,990 and \$8,316, respectively.

Harris is also offering a streamer magnetic tape drive for all 1600 products and the Mind Series, according to the vendor spokesman.

Priced at \$16,016, the option is designed for streaming data "on the fly" at 160K bit/sec nominally, the vendor spokesman said. In addition, it reportedly can be used in nonstreaming applications as well, the spokesman said.

More information is available from Harris' Information Terminals Group, which can be reached at 16001 Dallas Pkwy., P.O. Box 400010, Dallas, Texas 75240.

The controller operates in a point-to-point or multipoint environment at transmission speeds up to 56K bit/sec. It will communicate with the IBM 370, 30 series, 3080 series and 4300 series processors. It is also compatible with data links controlled by IBM 3704, 3705 and 3725 communications controllers and with the Integrated Communications Adapter of the 4331, the vendor spokesman said.

The 2074 is designed to be installed and customized for operations by the customer, the vendor spokesman said. For customizations, users must complete a Memorex-provided configuration work sheet and key in that information via a display station attached to the 2074.

Throughout the procedure, users are prompted by a series of menus displayed in English along with the appropriate sequence codes, according to the vendor spokesman.

First customer shipments of the 2074 are scheduled for September, and the purchase price will begin at \$13,595, the vendor spokesman said.

More information is available from Memorex, which can be reached at M/S 12-39, San Tomas and Central Expwy., Santa Clara, Calif. 95052.

Smart Controller Out for IBM CPUs

MISSION VIEJO, Calif. — JDS Micro-Processing has introduced an intelligent controller for connection of asynchronous Ascii terminals, microcomputers and printers to the IBM 370, 4300 and 30 series.

The Hydra II is said to eliminate the need for 3705, 270x, 3274 controllers, protocol converters and remote software. The unit reportedly allows the connected units to appear as local IBM 3278s to the IBM host, according to a spokesman for the vendor.

The eight-port Hydra II costs \$6,900, and the 16-port version costs \$9,900, the spokesman said.

The units are available through the firm's marketing arm, Diversified Data Resources, Inc., which can be reached at Suite 7, 25 Mitchell Blvd., San Rafael, Calif. 94903.

'Microgate' Extends IBM Micro

AUSTIN, Texas — Gateway Microsystems, Inc. has announced Microgate, an integrated hardware/software product said to bring communications capability to the IBM Personal Computer.

Microgate reportedly emulates the IBM 2780/3780 Binary Synchronous Communications protocol, with several extensions specifically designed to complement the utilization of a Personal Computer in the corporate communications environment. The product is highly configurable, allowing communications with a variety of computer systems. Microgate operates either synchronously or asynchronously, supporting modems with data rates rang-

ing from 300 to 4,800 bit/sec.

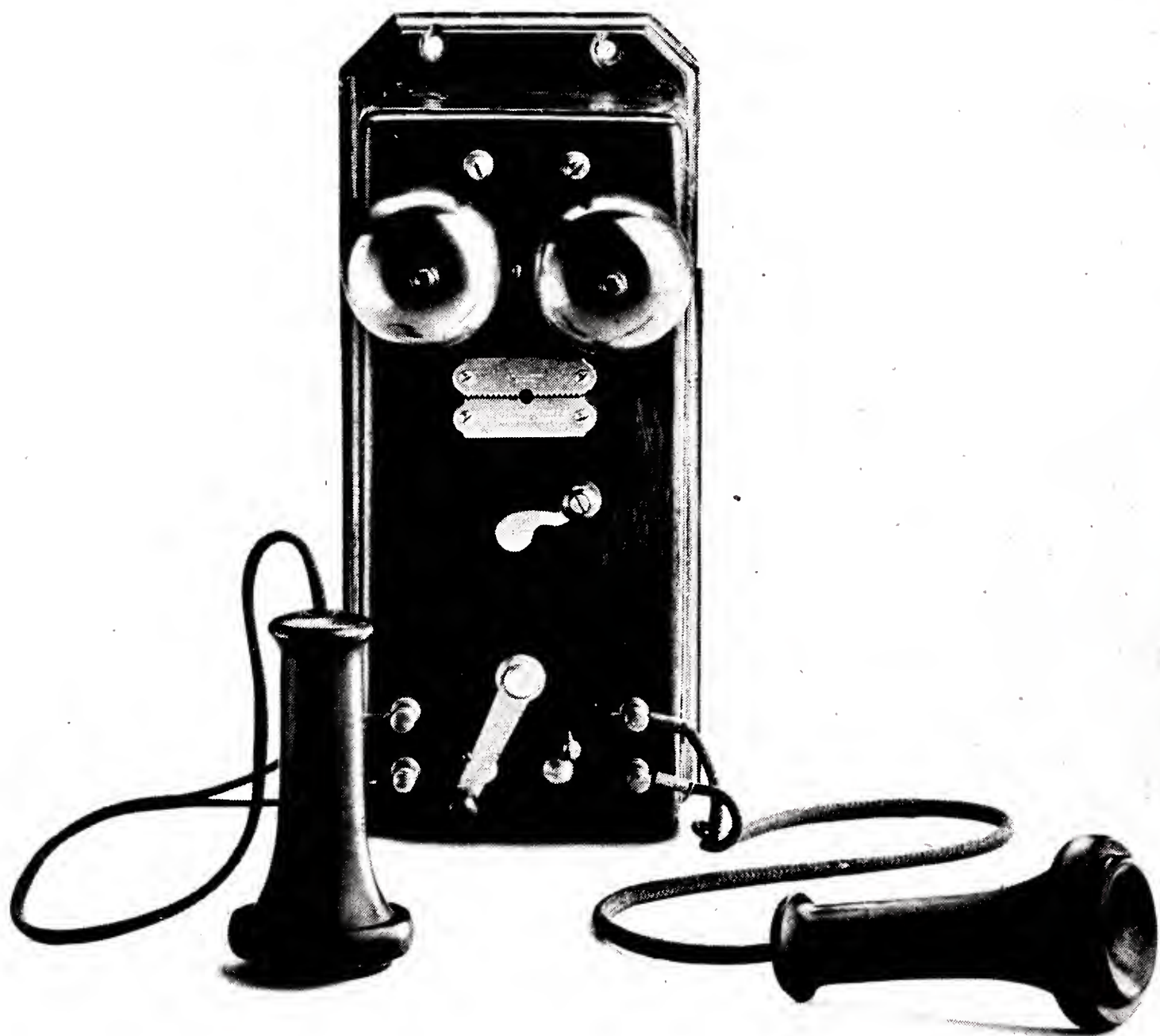
It requires minimal user training, because it is self-documenting and offers multilevel, on-line operator assistance with each command. It operates interactively or in batch mode and supports batch transmission of information in either attended or unattended mode.

Microgate is offered at a single-unit price of \$895, including serial communications controller, modem cable, licensed software on diskette and user documentation.

Gateway Microsystems can be reached through P.O. Box 10998, Austin, Texas 78766.

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Two Graphics Terminals Introduced by Psitech

TUSTIN, Calif. — Two dual-processor color graphics terminals have been introduced by Psitech.

The GTC 214 and 224 are based on a graphics engine on which resides one of two 8/16-bit processors. The second identical processor is housed on the I/O board that controls all user interfaces.

The units feature one standard Ascii character set

and two user-programmable character sets.

The GTC 224 is said to feature a rainbow palette, which allows the display of any eight colors from a selection of 4,096 choices, while the GTC 214 features eight color choices.

The GTC 214 costs \$7,000, and the 224 costs \$7,400 from the vendor at 2842-C Walnut Ave., Tustin, Calif. 92680.

LM Ericsson Unveils Info Products

(Continued from Page 53)

disk units handle one disk plus an optional disk, and one handles only one disk, Ericsson said.

The terminals include three models, each with 64K bytes of internal memory and 80 char./line. Two supply monochrome color, and one has four-color capability. The Alfaskop 41 in its basic configuration is priced at \$4,477 per terminal and will be available in July.

The bank branch on-line teller system, called the System 2100, is based on three major subsystems that can be configured to meet the needs of large and small banking institutions. The 2100 consists of computers interconnected via a direct memory access channel or a local/remote terminal bus, depending on computer type, Ericsson said.

The components of the system include an Ericsson

minicomputer-based Local Computer, a 16-bit Intel Corp. 8086 microprocessor-based Communications Computer and 16-bit Terminal Computer.

The minicomputer-based Local Computer has four models with internal memory ranging from 128K bytes to 2,048K bytes and disk storage capacity from 880M bytes to 1,760M bytes. It is designed for use in regional centers or large bank branches for local DP and data base handling.

Two 16-bit communications processors are available which function as front-end computers to the Local Computer or as self-contained units for small- and medium-size branches. The Communications Computers come with 512K bytes and 640K bytes of internal memory and four- and 10-network port capabilities. Both models have 20M-byte disk storage capacity.

The Terminal Computer terminal is a stand-alone device that controls one or two workstations operating separately and independently of each other. The System 2100 will be available the first quarter of 1984 and will cost between \$4,200 and \$6,000 per terminal, depending on configuration.

Also introduced was the MD 110 digital/voice data switch, which Ericsson said digitizes voice input. It can run on communications lines from 9,600 bytes to 56K bytes and can handle from 100 to 20,000 voice/digital data stations.

This unit is priced at about \$1,000 per connection. It will be available in the first quarter of 1984. More information on these products is available from Ericsson, which is located at Greenwich Office Park No. 3, Greenwich, Conn. 06830.

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Unsurpassed reliability. State-of-the-art technology. That's what you can count on with NEC modems — and for some very special reasons.

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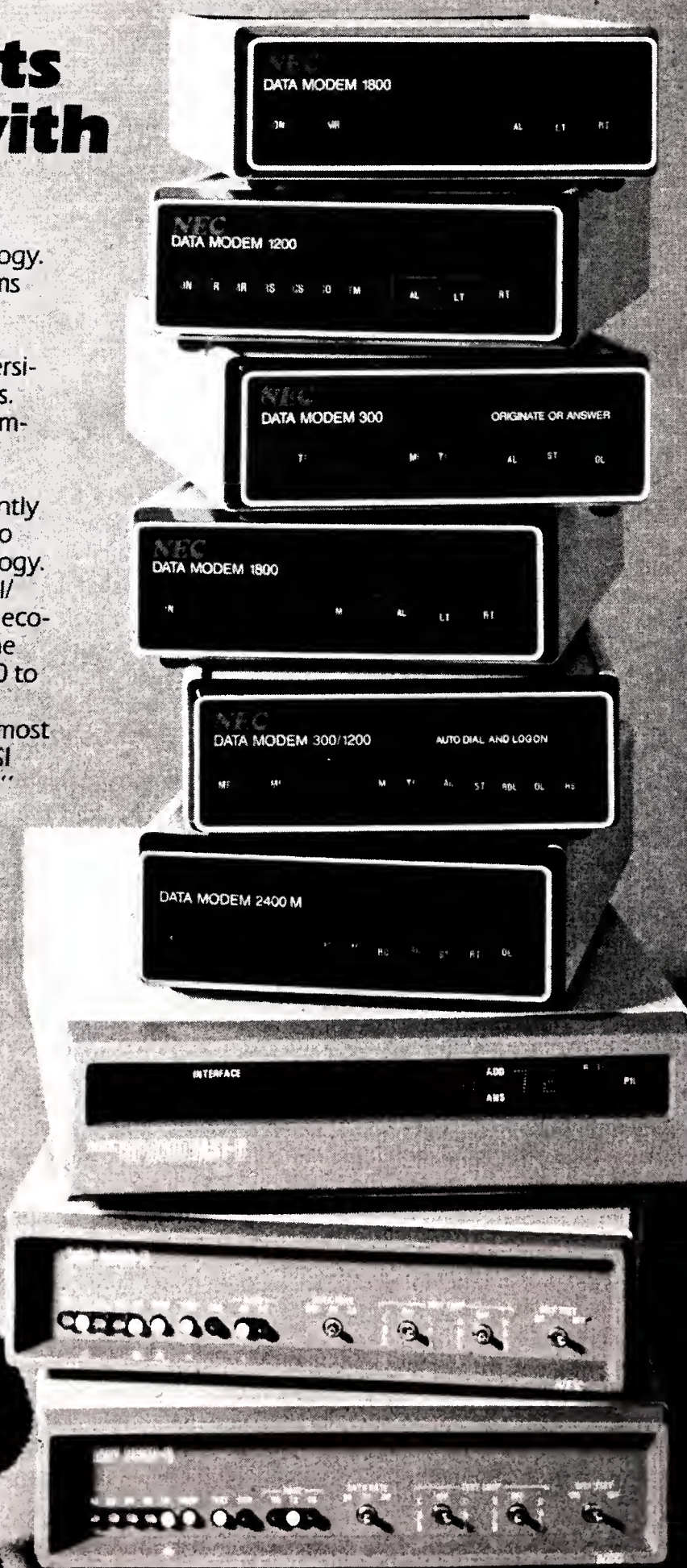
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The computer system that made mothers' eyes glisten and management faces glow.

A special bouquet of flowers says love in a way that nothing else can.

Ask the more than 1,000,000 mothers who received them from distant sons and daughters through the floral network of Florists' Transworld Delivery (FTD) this Mother's Day.

It was a big job for FTD®, and this sort of peak surge could strain an ordinary computer system to the breaking point. But FTD doesn't use an ordinary system. They use a Sperry 1100 Series central computer, backed by the Mapper System. There is other equipment involved, but Mapper provides for very special

applications to handle the very special needs of FTD.

When your flower order is sent via this network, the florist who will be making the delivery has all the information quickly, and in printed form. Eliminating the possibility of error.

You can't expect Florists to become computer experts, and that's why this system was designed to be so easy to use. Non-DP people can master it in a day. And it's all in plain English.

An advantage of Mapper, according to FTD Executive Vice President, William Maas, is that, "Complicated internal analyses and customized management

reports can be designed and tested in less than half the time it takes to write a program in COBOL."

The Sperry Mapper System also allows FTD management to provide inventory control and telemarketing to its floral members.

In the words of Bill Maas, "Our task would be far more difficult without Sperry...without the Mapper System."

Mapper. The system that brings joy to mothers and management.



FTD and its emblem are registered trademarks of Florists' Transworld Delivery Association. Mapper is a trademark of Sperry Corporation.

We understand how important it is to listen.

Cellular Radio Offers Vast Wealth Of Opportunity for Voice, Data

(Continued from Page 53)

cells allow a number of calls to be handled simultaneously in the same frequency band. As the signal in one cell weakens, it is picked up by a transmitter in the next cell without interrupting communications.

The beauty of cellular radio is said to be in its tremendous capacity and power. Mobile telephones, currently a symbol of high status by virtue of the fact they are so difficult to obtain, will become much more accessible.

Voice, however, is just one medium that can be transmitted via cellular radio.

Even more far-reaching, perhaps, are the implications of data transmission over cellular radio. "You can do anything over cellular radio that you can do over a regular telephone," according to Stu-

art Crump, editor of *Cellular Radio News*. "Essentially, it's a regular telephone not tied down by wires, so it would be possible to operate any standard data communications devices over a cellular phone."

The list of applications for data transmission via cellular radio is extensive. A salesman on the road, for instance, would be able to use a portable terminal for inventory inquiries.

"When you look at the amount of time people spend out on the road, you see the potential," Lucas noted. "Cellular radio can fill a lot of the idle time spent in commuting."

In the speculation surrounding cellular radio, only one aspect of the new technology appears to be cause for concern. As a signal

switches from one cell to the next, a slight break lasting only a few msec occurs. The outage is imperceptible to the human ear and would not affect a conversation. But the data flowing at projected cellular radio speeds of 1,200 bit/sec is much more sensitive and could easily be interrupted.

The problem, however, could be solved by resending blocks of erroneous data.

But even if the transmission of data via cellular radio is technologically feasible, it still faces enough hurdles for industry soothsayers to predict that data transmission will not crystallize for another three to five years.

The FCC is in the process of reviewing and granting applications for mobile telephones as voice transmitters, but has given little consideration to the regulation of data transmission.

In addition, since cellular radio appears to be filling a void in mobile telephones — it is estimated that waiting lists for mobile telephones total 50,000 names — the industry is focusing its immediate attention on voice transmission, leaving the market for data transmission virtually unexplored.

"We're looking at data applications, but the people reviewing the various markets haven't completed their analyses," a spokeswoman for Motorola said. "It will be at least several months before we can discuss data applications."

Charles Robbins, a telecommunications consultant for International Data Corp. in Framingham, Mass., called data transmission a "very, very difficult" issue.

In Robbins' view, there remain a number of questions to be answered about data transmission via cellular radio. "Would people pay \$1,000 or more for a modem device in the unit? What if the data gets out of sync? What if it is intercepted? Should it be encrypted?"

While industry pundits generally agree that data transmission will arrive on the heels of voice, disagreement centers on how much later it will arrive. Some say data transmission will emerge in the next two years; but others say it will not happen before the end of this decade.

The most that can be said at this point, according to one analyst, is that once voice transmission becomes a reality, the industry will have the time and inclination to take stock of what is in store for data transmission.

Users of Encore 200 Get Monitoring Capability

RIDGEFIELD, Conn. — Users of Digitech Industries, Inc.'s Encore 200 portable network analyzer can now monitor data communications based on Burroughs Corp.'s Bisync, Sperry Corp.'s Uniscope and Digital Equipment Corp.'s Digital Data Communications Message Protocol (DDCMP) software.

With software for Burroughs' Bisync, four modes — poll, select, fast select and contention — reportedly can be monitored between modems and remote TD-831 ter-

minals, a spokesman said.

Software for Sperry's Uniscope will allow monitoring between host and UTS-100, 200 and 400 terminals, the vendor said. DDCMP software will allow monitoring on lines using DEC's data communications message protocol.

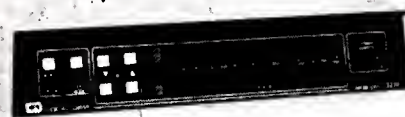
The three software programs will be supplied on 5¼-in. disks without charge to existing and future Encore 200 owners. Encore 200 costs \$16,500 from the firm at 66 Grove St., P.O. Box 547, Ridgefield, Conn. 06877.

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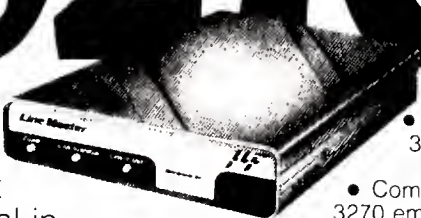
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Storage Products Bow at NCC

State-of-the-Art Recording Unwrapped

ANAHEIM, Calif. — At the recent National Computer Conference (NCC) here, a number of vendors introduced storage media products, several incorporating state-of-the-art recording technology.

Control Data Corp., for example, introduced seven disk products, five of which have thin-film data recording heads and disk controllers that are compatible with Intel Corp. Multibus computer systems.

Aimed mainly at the OEM and systems integrator, the CDC disk products include a 3½-in. Cricket Winchester disk drive that features 6.38M bytes of unformatted storage using thin-film recording heads and a plated media. The unit costs \$465 in OEM quantities, CDC said.

CDC also announced a 14-in. OEM Winchester disk drive that also employs thin-film recording heads. The unit can store up to 825M bytes of data with a recording density of 15.4K bit/in. and a track density of 960 track/in. Called the CDC 9771 Expanded Module drive, the unit has a data transfer rate of 14.5M bit/sec and costs \$9,840 in OEM quantities. The units will be available in

the third quarter of 1983, the vendor said.

Two half-height 5¼-in. floppy disk drives were also announced by CDC. Called the CDC 9428 and 9429 floppy disk drives, the units are designed

for use with microcomputers and small business systems. The units provide up to 1M byte of unformatted data storage. The Model 9428 includes 40 tracks per recording surface at a track density of 48 track/in. The

number of tracks and track density is doubled in the Model 9429 drive.

The 9428 costs \$150, and the 9429 costs \$185, CDC said.

CDC also announced the 9415-80, an 80M-byte drive that employs thin-film recording heads. The unit has five disks in a fixed, sealed module. The drive has a recording density of 9,500 bit/in. and an average data access time of 35 msec. The unit costs \$1,875 in OEM quantities, the vendor said.

Finally, CDC announced a single-board controller that can connect up to four removable and/or fixed disk drives using a standard storage module device interface to Multibus-based systems.

Called the CDC 9090, the unit can handle up to 320M bytes of removable data storage and up to 1.3G bytes of fixed data storage. The unit costs \$1,745 in OEM quantities, the vendor said.

More information on the disk products is available through P.O. Box O, Minneapolis, Minn. 55440.

Fujitsu Announcements

Fujitsu America, Inc. has announced seven fixed disk drives and one magnetic tape drive.

Highlights of the Fujitsu lineup include an addition to its line of 5¼-in. disk drives, a unit that boasts 26M bytes of data storage. The unit has a buffered stepper seek time of 85 msec and costs \$1,250.

(Continued on Page 60)

Isomax Offers Vertical, Horizontal Storage

By Tom Henkel
CW Staff

ROCHESTER, N.Y. — Eastman Kodak Co. here has introduced what is claimed to be the first floppy disk media capable of storing data in both vertical and horizontal formats. The disk — called the Isomax floppy disk — was unveiled recently at the National Computer Conference in California.

Isomax's media reportedly has up to ten times the storage capacity of a standard floppy disk, extending storage capacity of a 5¼-in. floppy disk from 1M byte to about 10M bytes. The media is currently available only to

disk drive manufacturers who are developing compatible drives. About 10 major disk manufacturers are now developing products using Kodak media, according to William L. Kroon, director of marketing for the Magnetic Media Division of Kodak's Spin Physics unit. He said the disks will be available with the first commercially available disk drives using vertical recording technology.

Isomax disks currently cost between \$10 and \$20 each in quantities of 1,000. Disks designed for horizontal recording cost about \$6

(Continued on Page 60)

For Graphics Applications

B-Size Eight-Pen Plotter Unveiled

DANBURY, Conn. — IBM Instruments, Inc. has unwrapped a B-size eight-pen digital plotter that can be used to produce color charts for both technical and presentation graphics applications. The printer can output color business graphics from the company's 5292 Model 2, which was introduced recently at the National Computer Conference.

Under microprocessor control, the XY/749 plotter can create circles and arcs, axes and point-marks as well as the Ascii 96-char. set. All of these characters can be written at any angle with users having control of height, width and slant. The company contends this greatly

simplifies user programming.

Because the XY/749 is command-set compatible with the company's XY/750 plotter, existing software can be used without modification, the company said.

In addition to plotting, the XY/749 can be set to monitor data streams, operate as a line printer and execute a test program which lists interface parameters.

The unit's RS-232C and IEEE-488 interfaces permit it to be used with most mainframes, mini and personal computers. The device can also be used with an 8-bit parallel bus, according to the company.

Available immediately, the

XY/749's price starts at \$1,995, according to the vendor, through P.O. Box 332, Danbury, Conn. 06810.

Columbia's 30-Lb Micro Claims IBM Compatability

COLUMBIA, Md. — A 16-bit microcomputer system promising full IBM compatibility in a portable package was introduced here by Columbia Data Products, Inc.

The Columbia VP weighs 30 lb. and offers both IBM hardware and software compatibility. It comes complete with business software, according to

the vendor. The VP offers 120/256K bytes of memory. Additional storage capacity is available in dual half-height 320K-byte floppy disk drives.

The VP also features one RS-232 port, a parallel printer port and a 9-in. monitor with graphics capability. Prices start at \$2,995, from the vendor at 8990 Rt. 108, Columbia, Md. 21045.

Fujitsu Releases 265K-Bit RAM Chip

By Ed Scannell
CW Staff

SANTA CLARA, Calif. — Fujitsu Microelectronics, Inc. has unwrapped what is believed to be the industry's first commercially available 256K-bit dynamic random-access memory (RAM) chip. The chip was shown recently at the National Computer Conference in Anaheim, Calif.

Fujitsu said it will eventually incorporate the chip into one of its 16-bit microcomputers via a

single plug-in board. It will reportedly allow users of the system to store up to 1M byte of RAM and up to 40M bytes of hard disk storage.

Scheduled for delivery sometime during this year's fourth quarter at a cost of \$2,495, the board is expected to have a dramatic impact on the company's future mainframe and multiuser microcomputers in terms of cost, performance and reliability, a spokesman said.

"The only way to get 1M byte into a system is to come up with a 256K-bit RAM," said Richard Kors, vice-president of Fujitsu's Professional Microsystems Division. Kors stated the chip will have significant advantages for the company's future products, particularly its multiuser systems. "As we go to multiuser systems that support say, four users, we can give each user a quarter of a megabyte," he said.

One day after Fujitsu's an-

nouncement, AT&T announced it would begin commercial production of a similar product this summer, which would be available "later this year," according to AT&T officials. Other companies reportedly working on 256K-bit RAM chips are Hitachi Ltd. and Oki Electric Industry Co.

More information about the Fujitsu RAM chip can be obtained by contacting the vendor at 3320 Scott Blvd., Santa Clara, Calif. 95051.

Combines Merits of 3262, 3211

IBM Unwraps 4245 Band Printer

PORT CHESTER, N.Y. — Combining some of the attributes of its 3262 and 3211 line printers, IBM has unwrapped a 2,000 line/min band printer which the company said allows users to upgrade to the 3203 series Models 4 and 5.

Compatible with the 4300, 3031 and virtual storage 370 processors, the 4245 Model 1 band printer has 132 print positions at 10 char./in., prints six to eight line/in. under program control and handles most forms used on other IBM line printers in-

cluding card stock and six-part forms, the company said.

The impact device accepts form sizes ranging from 3½- to 22-in. wide and from 3- to 24-in. long, a spokesman noted. However, for forms longer than 14 inches, users need the rear stacker enclosure left open. Forms longer than 17 inches also require the front forms compartment door to be left open, according to the firm.

The 4245 prints 2,000 line/min using a 48 char. print band, 1820 line/min

using a 52-char. band, and 820 line/min using a band with 124 characters. Replacement or additional bands for commercial and scientific applications and international languages are available through IBM's Systems Supplies Division.

The 4245 is expected to be available in July and costs \$63,500. Three-, four- and five-year term leases starting at \$1,238/mo are available through the IBM Credit Corp., the vendor said from 900 King St., Port Chester, N.Y. 10573.

Kodak's Isomax Floppy Boasts Vertical and Horizontal Formats

(Continued from Page 59)
each, Kroon said.

The disks employ an isotropic cobalt-enhanced magnetic particle, which can reportedly record data at a variety of angles, ranging from the conventional horizontal format up to a vertical, or perpendicular, format. Users can mix recording densi-

ties on a single floppy. However, Isomax floppies are most cost-effective when used to record data in a vertical format, he explained.

To use the media, disk drives must be equipped with a specialized recording head. Conventional disk drives have a 50-micron gap between the recording head

and media. Disk drives using the Isomax media must have a 20-micron gap between the recording head and media, Kroon said.

Isomax floppy disks are expected to cost about 20% more than disks designed to record in a horizontal format. Kroon, however, noted that users will be able to pack about 10 times more data, or about 40,000 bit/in., onto an Isomax floppy using a vertical recording format.

When available commercially at the end of 1983, the disks will be guaranteed for two years, or about five million passes, according to Kroon.

Kodak is located at 343 State St., Rochester, N.Y. 14650.

II costs \$1,525 for the four-track model and \$1,750 for the nine-track model, the vendor said.

The vendor is located at 16643 Valley View Ave., Cerritos, Calif. 90701.

Vendors at NCC Unveil Score of Memory Products

(Continued from Page 59)

In addition, the firm announced a series of 5¼-in. disk drives that feature an average positioning time of 25 msec and are offered in 29.1M-, 50.9M- and 80M-byte capacities. Fujitsu America is located at 3075 Oakmead Village Drive, Building 3, Santa Clara, Calif. 95051.

Other media introductions include: streaming tape drive products from Tandberg Data, Inc., the Mark II and Mini-Mark II ¼-in. drives. The units are available in four-track versions with 20M- and 27M-byte formatted capacities and in nine-track 40M- and 60M-byte formatted capacities. Both drives can be factory ordered to operate at either 45 or 90 in./sec.

The Mini-Mark II costs \$1,500 for the four-track model and \$1,575 for the nine-track model. The Mark

Harris Cuts Prices On 9200 Family of Systems

DALLAS — Harris Corp. has announced price reductions on its 9200 family of interactive IBM 3270-like communications systems.

The price cuts include a 15% reduction in list purchase prices and quantity purchase discounts up to 40% for most 9200 system

components, the vendor said. For example, the Harris 9279 base color terminal is now down to \$2,950 from \$3,595.

Further details are available through Harris headquarters at 16001 Dallas Pkwy., P.O. Box 400010, Dallas, Texas 75240.

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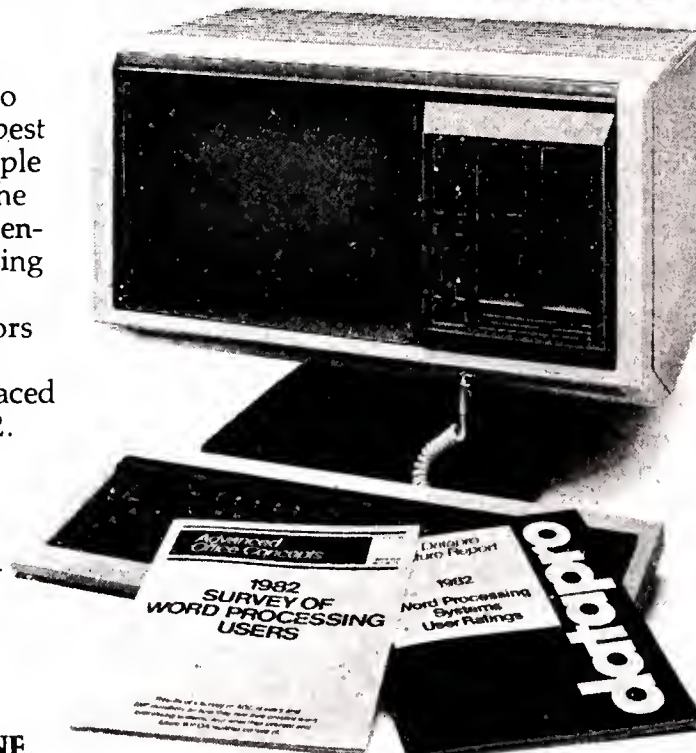
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Lack of Standards Cited

Graphics Yet to Make Corporate Splash: Survey

By Jim Bartimo

CW Staff

ANAHEIM, Calif. — Computer graphics have not yet made a big splash in large corporations, a random survey of attendees at the recent National Computer Conference has shown.

However, those who have tested the waters have high praise for their systems.

One major reason why some attendees have not yet bought into graphics is a lack of standards.

Mixed Reactions

"We haven't gotten into graphics yet, partly because of the lack of standards," said Robert Fischer, an engineer for NCR Corp. "They're starting to come out with some graphics standards now, so we'll be getting into graphics soon."

Other attendees said that computer graphics were too expensive or not important enough on which to spend company dollars.

"We would be using business graphics if we bought any kind of graphics," said one representative from a Canadian manufacturing company, "but we don't really need it. Business graphics aren't like CAD/CAM [computer-aided design and manufacturing] systems where the engineers really need it."

One engineer who agreed that computer graphics is a must for his profession was found lingering around the California Computer Products, Inc. booth. "Graphics has improved my business by several orders of magnitude," said R.J. Price, vice-president of information systems for Peabody Coal Co. of St. Louis, Mo.

"We use a combination of packages to create our own

mapping system to show where the coal is," he said. "It allows us to find and produce coal more efficiently."

"You typically have engineers drawing maps by hand," Price continued. "That's slow and doesn't give the engineer any interaction to make corrections."

While many engineers are finding graphics indispensable,

some offices are experimenting with them for the first time.

"From where I am, I see a lot of end users using graphics," said Richard Witt, project administrator for office automation at the local Rockwell International Corp. office. "We use a lot of graphics to produce technical manuals," Witt continued.

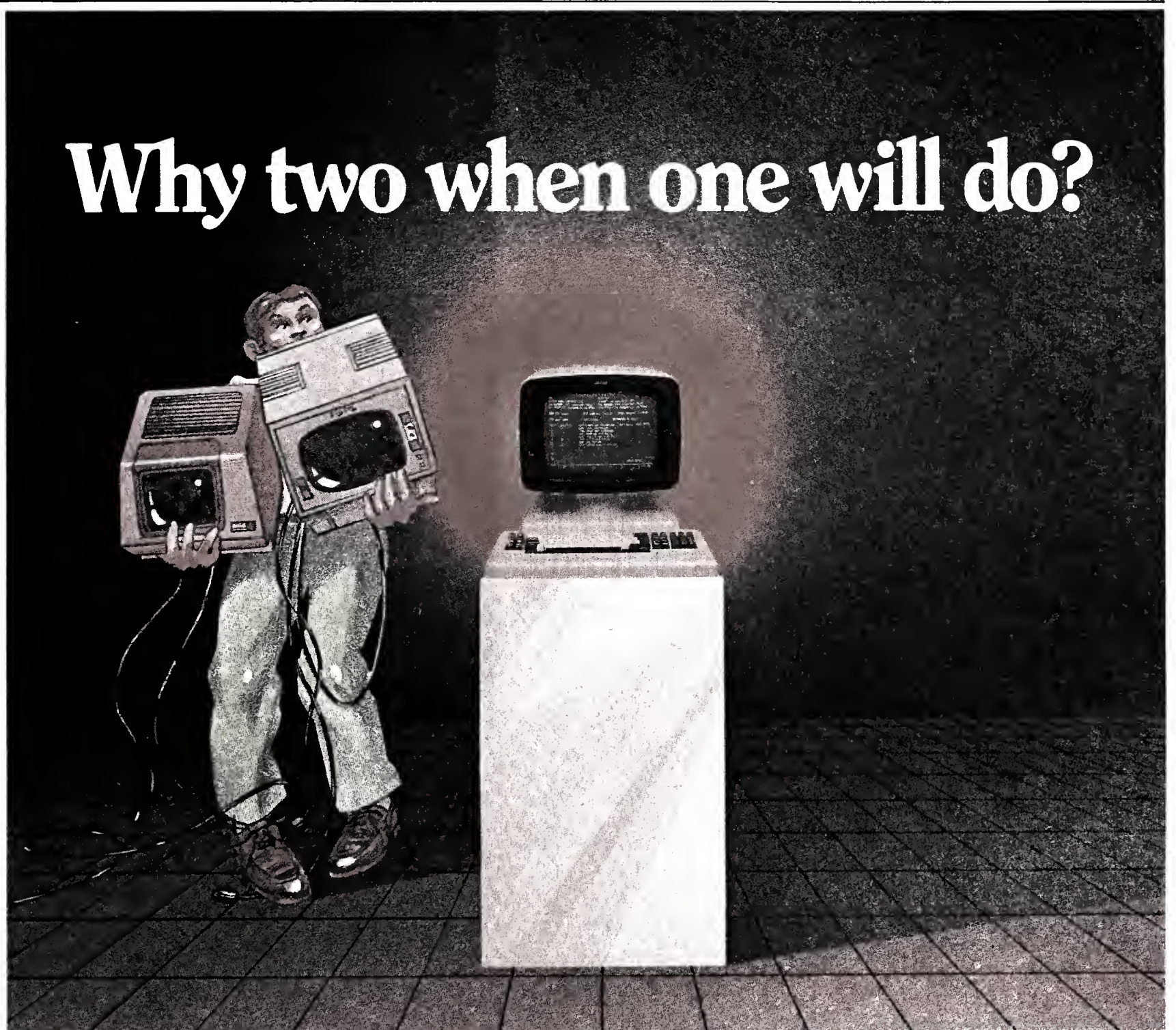
"Computer graphics allow us to make changes closer to our deadlines and make the manuals more accurate."

In one of Xerox Corp.'s data processing shops, graphics have become popular with at least one programmer. "We use graphics for flow charting and memo design," Luis Ashelford said.

"They're especially useful

when combined with text," he said.

One president of a computer consulting firm plans to make use of graphics on his IBM Personal Computer. "I want to use my micro to do some of the things I've been doing on a mainframe," the consultant said. "I'm not hoping it can be done — I'm expecting it."



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Gets Low Grade in Software Integration

Lisa Rated High in Price/Performance

By Jim Bartimo
CW Staff

CHERRY HILL, N.J. — Management Information Corp. (MIC) has released an evaluation of Apple Computers, Inc.'s Lisa that compares it with other office workstations and rates it high in price/performance, but low in other areas.

Other workstations and personal computers with workstation capabilities evaluated in the report, entitled "The Apple Lisa," were the Xerox Corp. Star, the IBM Personal Computer XT and the Digital Equipment Corp. Professional 350. "One of the biggest complaints from Lisa's critics," according to the report, "is that compared with its competition, Lisa is overpriced."

"But people forget that Lisa is a multi-task, single-user personal computer that comes bundled — the IBM and DEC are unbundled systems with additional hardware and software costs running between \$3,000 and \$8,000," the MIC report continued.

Lisa's basic configuration includes a 12-in. black-on-white bit mapped terminal, a mouse cursor control, a Motorola, Inc. 68000 processor, 1M byte of main memory, 5M bytes of hard disk memory, two 5¼-in. floppy disks of 860K bytes each, Apple's operating system and six application packages.

The Star, priced \$4,000 more at \$14,000, includes the Xerox 8000 NS processor, 192K bytes of memory, a 12-in. display, a mouse, keyboard, eight application programs, two 5¼-in. floppy diskettes of 600K bytes each, the Xerox Polit operating system and one 10M-byte hard disk, according to the report.

"Like the Lisa, the Xerox has no memory expansion capabilities," the report said. "Lisa, ironically, is an offshoot of the Xerox Star, but is less expensive," the MIC report continued.

In price/performance evaluation, the Lisa holds its own against the Professional 350 and Personal Computer XT personal computers, the report claimed. A DEC computer configured to equal the Lisa would cost about \$1,400, according to the report.

An IBM Personal Computer XT, which currently lacks the proper software, could not be configured to equal the Lisa at this time, but it does cost less, the report maintained.

While the Lisa received high grades in many areas, it did not receive a totally positive review. For instance, not all of Lisa's software packages can be integrated with each other. The data base program, Lisalist, currently cannot be integrated into any other Lisa package, MIC found, but most Lisa programs can interact with each other.

Another area in which Lisa received criticism was response time. "While Lisa does respond well to activities, its re-

	APPLE COMPUTER, INC. LISA	XEROX CORP. STAR	IBM PERSONAL COMPUTER XT	DIGITAL EQUIPMENT CORP. 350
Processor	Motorola, Inc. 68000	Xerox 8000 NS	Intel Corp. 8080	LSI-11/23
Memory	1M byte	192K bytes	640K bytes	256K bytes
Operating System	Apple	Polit	PC DOS	P/OS
Screen Display	40 by 132	40 by 132	25 by 40 25 by 80	24 by 80 24 by 132
Keyboard?	Yes	Yes	Yes	Yes
Mouse?	Yes	Yes	No	No
Local-Area Network Capabilities*	Appletalk; Ethernet	Ethernet	None	Ethernet; Decnet
Floppy Disks	2K by 860K bytes	2K by 600K bytes	One 360K bytes	2K by 400K bytes
Hard Disks	5M bytes	10M bytes	10M bytes	5M bytes
Software	Lisawrite; Lisacalc; Lisagraph; Lisalist; Lisadraw; Lisaproject	Text Editing; Equations; Graphics; Advanced Graphics Fields; Spelling Checker; Electronic Mail; Information Re- trieval/Records Processing	Dbase-II; Visicalc; Wordstar; Visiplot	Basic; Visicalc; Visitrend; NPL; TMS
Total Hardware Price	Bundled	Bundled	\$7,660	\$10,131
Total Software Price	Bundled	Bundled	\$1,690	\$ 4,195
Total System Price	\$9,995	\$14,000	\$9,260	\$14,326

*This configuration indicates what the manufacturers have set up as a basic system and does not reflect on third-party vendors. (Not included in price.)

Apple's Lisa Compared With Similarly Configured Competitors

Source: MIC

sponse time between the screen and the operating system is quite slow," the report said.

For instance, response times as slow as 45 seconds have been reported by Apple in the Lisa project program, according to the report.

Finally, the report said that Lisa does

not add much to current word processing and spreadsheet technologies, although it does improve a manager's capability to produce graphics for planning.

The report is priced at \$35, and information is available from MIC, which is located at 140 Barclay Center, Cherry Hill, N.J. 08034.

Personal Computers Seen Center Of Office of the Future at NCC

By Katherine Hafner
CW Staff

ANAHEIM, Calif. — The personal computer is the workstation of the future, but only by default. And by the very existence of the personal computer, the nature of the office is in a state of revolution.

So maintained panel members who spoke recently at a National Computer Conference session on personal computers in the office.

"Personal computers are low-cost and easy to use," Alexandra Corson, a researcher with International Data Corp. based in Framingham, Mass., said. "The problems of integrating word processing with data processing allows a slot for the personal computer."

A year ago, no one had any idea what the impact of the personal computer would be, Corson said. It has since emerged as the "winner hands-down in 'the gunfight at the OA corral,'" she said.

In 1982, Corson said, U.S. manufacturers shipped 2,650,000 desktop computers. By 1987, she projected, that number will rise to nearly 15 million.

But Corson tempered her enthusiasm for personal computers. "Unless you buy an IBM or similar [personal computer], you'll have to be prepared to bite the bullet," she said. "Your first [personal computers] are likely to be throwaway items."

Corson also urged her audience to focus on individual needs when investing in personal computers. Personal computers render their user generally self-sufficient, which is causing a "dramatic turning inside out and upside down of the central world of DP," she said.

"The whole nature of information is changing," she said. "Systems will become more integrated, but who is going to manage these integrated systems?"

Corson's sentiments were echoed by Mike Gamroth, an agricultural extension agent in Oregon who is in the process of introducing microcomputers into his office. "Personal computers don't have to run your business or your life, but they can be an important tool for you," he said.

MAI Extends OMS for Basic Four

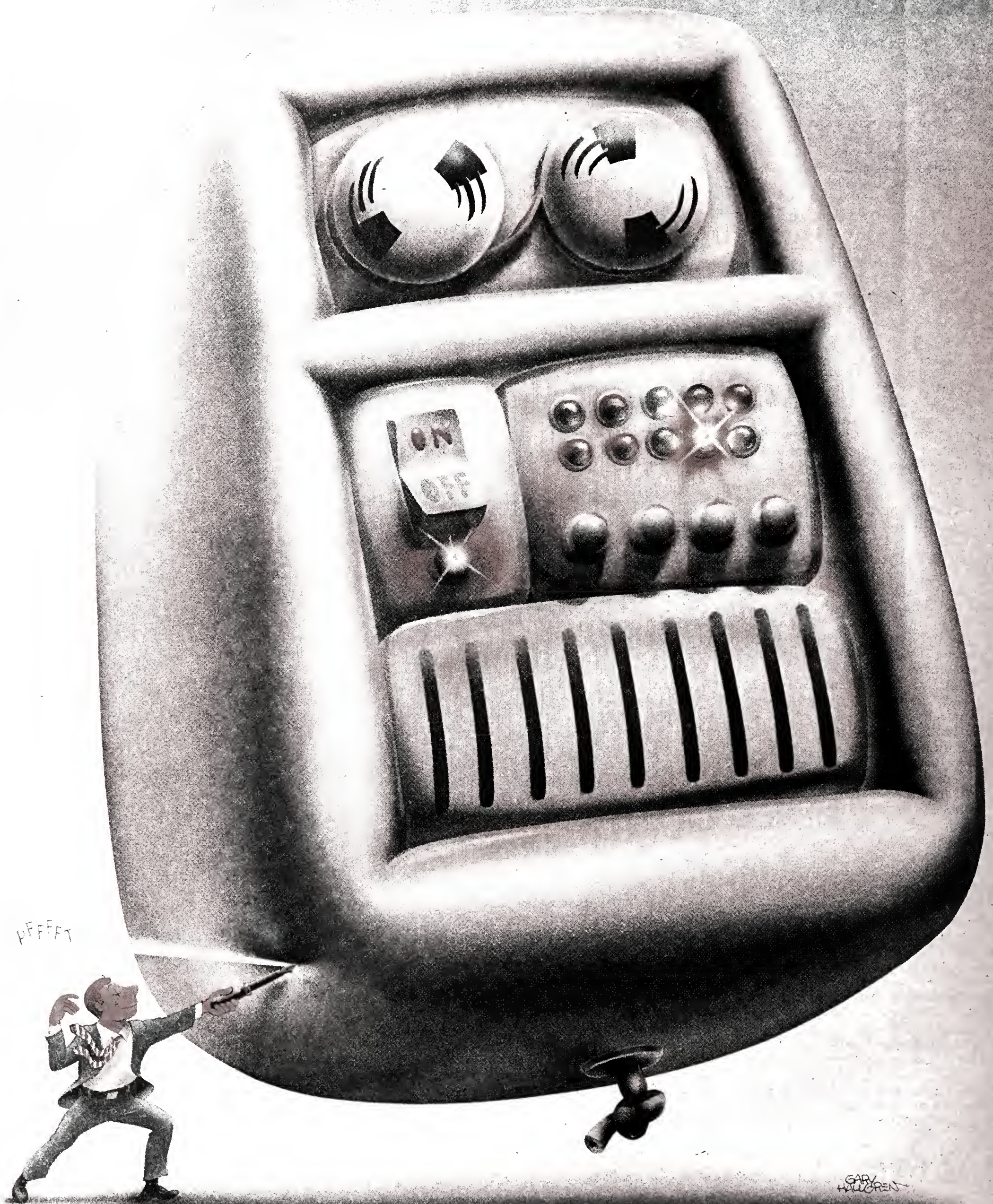
TUSTIN, Calif. — Management Assistance, Inc. (MAI) has enhanced its Office Management System (OMS) software for its Basic Four minicomputer systems with the addition of a personal calendar, automatic meeting scheduler, spelling verifier and bulletin board.

The scheduler sets up meetings among any number of people in the organization by checking users' computerized calendars for meeting time conflicts, a spokes-

man said. The spelling verification program has been expanded to check spelling in messages, bulletin board entries and word processing documents, the spokesman added.

The software is available for a starting price of \$17,000.

Additional information can be obtained from MAI, Basic Four Information Systems Division, P.O. Box C-11921, Santa Ana, Calif. 92711.



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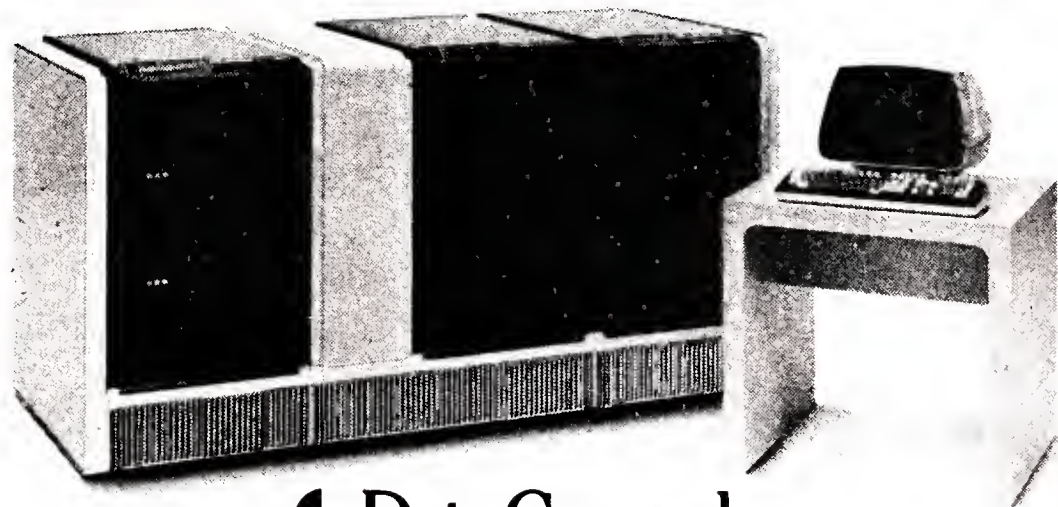
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Agreement in Principle Reached

Martin Marietta to Purchase Mathematica

By Bill Laberis

CW Staff

BETHESDA, Md. — Martin Marietta Corp. has penned an agreement in principle to purchase Mathematica, Inc., the Princeton, N.J.-based data base and software services company, for \$30.8 million in cash and securities.

The agreement needs the approval of the shareholders of both firms and should be finalized by mid-summer, a Mathematica spokesman said. Thereafter, Mathematica will operate as a fully owned unit of Martin Marietta's Data Systems group, a \$250 million per year division of the parent corporation. Mathematica's shareholders will receive \$27 per share for their holdings, about \$4 per share more than what Mathematica traded for prior to the acquisition announcement.

For Mathematica, the acquisition by the diversified giant will mean, among other things, an infusion of capital needed to

The software business "is becoming extremely capital intensive," making acquisitions of independent software companies by more cash-rich companies a viable alternative to funding research and development — Tibor Fabian, president of Mathematica, Inc.

support increasingly more expensive product development, according to Tibor Fabian, Mathematica's president.

In an interview last week, Fabian said the software business "is becoming extremely capital intensive," making acquisitions of independent software companies by more cash-rich companies a viable alternative to funding research and development.

If approved, the acquisition will be the

second such deal involving a major independent software vendor in recent months. In March, Dun & Bradstreet Co. paid \$50 million to acquire McCormack & Dodge Corp., a deal similarly motivated by McCormack's growing need for research and development funds [CW, March 28].

"We are also living in a time of shortening product cycles, making our research projects all the more important," Fabian said. "Certainly, Martin Marietta's financial strength was a key component of our desire to become a part of them."

Beyond the purely financial stimuli of the acquisition, Fabian noted that Martin Marietta is an extensive user of Ramis, Mathematica's family of data base management products and a fourth-generation language. In the past, Martin Marietta has made Ramis available to its time-sharing customers, "And now they will give us increased assistance in marketing current and future versions of the products."

"I know Martin Marietta is looking forward to creating Ramis applications," Fabian continued. "At the point it does so, investment in marketing will become quite important. Clearly, more and more investment will be required to maintain prominence of product."

Another aspect of both Martin Marietta's and Mathematica's operations that figured into the acquisition agreement is the volume of business each conducts with the

(Continued on Page 70)

IBM Suing Former Employee For Tech Theft, Business Venture

By Jeffry Beeler

CW West Coast Bureau

SAN JOSE, Calif. — IBM has sued one of its former employees for allegedly stealing the firm's thin-film media technology and then using the proprietary know-how to go into business for himself.

Filed on May 11 in Santa Clara County Superior Court, the suit accuses Dr. Yeong S. Lin of secretly forming Lin Data Corp. with the help of confidential technology he misappropriated while he still worked for IBM.

Lin Data, which would have competed directly with IBM in the thin-film disk arena, was incorporated on March 8, one day before Lin resigned from IBM to go his own way, the suit alleges.

In its complaint, IBM also accuses Lin of disclosing the company's trade secrets when he prepared Lin Data's first detailed business plan, which formally proposed the company's creation and outlined its objectives.

The plan, which Lin is alleged to have shown to IBMers and non-IBMers alike, is said to have contained a wealth of highly sensitive information describing IBM's thin-film media technology and market-

ing ideas. Among the compromised information were top-secret details concerning:

- A thin-film media production process that reportedly bears a striking similarity to IBM's.

(Continued on Page 70)

DG Division Restructured, Looks To Improve Customer Support

By Ed Scannell

CW Staff

ANAHEIM, Calif. — With the restructuring of its General Systems Division now complete, Data General Corp. is hoping to deliver better service to its customers, particularly those in the industrial automation segment of the market.

The restructuring will also make the company better able to anticipate marketing trends and therefore provide better service, especially for those in the same market area, while enabling DG to get a firmer grasp on marketing trends, said John Crawford, vice-president and general manager of DG's General Systems Divi-

sion, during an interview conducted at the National Computer Conference here this month.

"The way we have it organized now, there is a product marketing group, a market planning group and a business planning group within each of our groups," Crawford said. "This will not only allow us to respond to marketing opportunities faster, but enable us to look forward and determine where the market is going. We can begin to anticipate what the market's requirements are, rather than having to react to its requirements," Crawford explained.

(Continued on Page 74)

Maguire Says Software AG Is Back on Track

By Bill Laberis

CW Staff

ANAHEIM, Calif. — Fourteen months ago, John Norris Maguire found himself wrestling for control of his company's expenses, which were clearly out of hand and consuming the lofty profits Software AG had enjoyed for several years.

Sales of the company's data base products and programmer aids had been growing steadily, rising from \$19 million in fiscal 1981 to nearly \$25 million in fiscal 1982. But expenses skyrocketed from \$14.5 million to \$23.6 million in this time, prompting both the company's chief financial officer and executive vice-president to resign and Maguire to reassume the company's line responsibilities.

From most indications, Maguire's efforts since those dark days a year ago have

begun to pay off. Software AG has posted modest earnings gains from operations in each of the last three quarters after posting its first loss ever last May. The \$250,000 loss reported in the most recent quarter was attributable to a \$1 million-plus cash settlement made to finalize a lawsuit brought against the company.

Moreover, Maguire said he believes that certain trends in the software market bode well for Software AG's product offerings, trends he claimed he foresaw "two decades ago."

In an interview at the National Computer Conference this month, Maguire said the most ardent task he faced in his financial housecleaning involved extricating the company from the consulting business in which it was so deeply mired.

(Continued on Page 75)



John Maguire

Tandem Chief Rates Creativity, Skilled Workers Keys to Success

By Robert Batt
CW West Coast Bureau
ANAHEIM, Calif. — The quality of skilled employees, rather than manufacturing costs, will determine which companies are successful in the nonstop transaction processing market, according to James Treybig, president of Tandem Computers, Inc.

In an interview at the National Computer Conference here recently, Treybig stressed creativity rather than management control as the critical ingredient in building a successful enterprise.

"A company needs to emphasize creativity and reward it. The key to success in the computer business is how you attract and motivate

people. This is where productivity comes from, rather than simply controlling manufacturing costs," he claimed.

Companies must be willing to accept failure, communicate effectively and tolerate the differences between people. "If you want creativity you must be willing to tolerate some confusion," he said.

However, most companies, he observed, are not set up this way, as it is far easier to put in a lot of structures and controls.

On the other hand, he warned that it is possible to go overboard in favor of creativity at the expense of management controls, and he admitted Tandem had experienced some problems in this area.

"The problem is when you grow fast, you do some things really well, and in other areas, nothing is done, so that you have gaps. Our job now is to fill those gaps," he said.

During 1982, the company saw its sales growth dip to an annual rate of 50%, down from the 90% annual growth it had enjoyed for several years.

Year-end results had to be revised due to internal auditing irregularities, and the company has since instituted a series of management and financial controls to centralize the control of manufacturing, product management and international marketing, he said.

"We could have done some things a little better," Treybig said, while maintaining that the company was not wedded to any particular growth rate. Profit, a good place to work and happy customers all came before growth, he said.

"Growth creates opportunities and attracts good people, but as far as I am concerned, I will be happy if we grow at 40% providing we are doing a good job," he claimed.

It will take nine months to a year before the company will know if its organizational changes have paid off, Treybig said. He expects fluctuations in the company's quarterly results for some time to come, although he claimed the underlying trend for Tandem will be solid.

For the first six months of Tandem's current fiscal year ending March 31, revenue increased 31% to \$190.1 million, up from \$145 million, with net income of \$13.5 million compared with \$14 million for the same period last year.

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Interviewed at NCC

Vendors See Economy on Upswing

By Bill Laberis
CW Staff

ANAHEIM, Calif. — All indications point to a sustained economic recovery, during which users will employ the hard lessons learned during a prolonged recession.

This was the dominant view distilled from random interviews with 10 vendors' representatives at the National Computer Conference held here earlier this month.

As could be expected, all the representatives said they have a more optimistic view of the U.S. economy now compared with 12 months ago, and all but one agreed the recovery will be sustained.

Importance of Attitude

However, a majority of those polled listed attitude as the key ingredient of recovery, ranking it above lower interest rates as the driving force behind sustained growth. It was generally felt that a leading indicator of recovery in the computer industry is the accelerating rate of employee hiring, particularly in the sales and marketing areas.

"There's a lot of subtle recruiting going on here at the show like I've never seen before," said Lee Clifford, director of marketing services at Beehive International of Salt Lake City, Utah.

Bill Vinson, Western sales manager for the Teleray Division of Research, Inc. in Mill Valley, Calif., said the recovery has outpaced his expectations of a year ago. Vendors have been particularly active in terms of new product development, signaling their optimism.

"Users," Vinson said, "are going to be much more cautious in their dealings with the vendors. They have learned to act more efficiently, so we'll have to work a bit harder to put our products across."

Vinson said users will employ their heightened market awareness to discriminate more carefully among vendors' products. He added that the recession has also attuned users to dealing with the rapid pace of technological change, making them generally more hesitant in making mass purchase decisions.

David Meis, vice-president of Compunix Data Systems, an IBM-compatible terminal distributor in Irvine, Calif., said users and vendors alike believe the current upturn "is not a short-term thing, but something that just might lead to a long period of real growth."

Users who postponed pur-

chase decisions due to relatively high interest rates a year or more ago are beginning to place orders again. Both Meis and Teleray's Vinson speculated that a significant portion of their companies' recent orders have been derived from pent-up user demand.

Anthony Barbarino, terminal project leader at Memtec Corp. of Salem, N.H., said

the computer industry today "is characterized by an aura of optimism. There's a lot of new design taking place, which is very encouraging."

But Barbarino disagreed with other interviewees on whether the lessons of the recession will be remembered.

"Mistakes are always repeatable, no matter how hard the lessons came," he said.

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IBM Names Ex-Employee in Tech Theft Suit

(Continued from Page 67)

• The exact composition of the firm's high-density disks.

• IBM's manufacturing plans, including precise estimates of the costs and capital equipment that would be required to produce thin-film media in large volumes.

• The company's product strategy and implementation plans as they relate to high-density disks.

Dissemination of the Lin Data business plan consti-

tutes a breach of Lin's signed agreement with IBM not to reveal any of the company's technological or managerial trade secrets, the IBM suit alleges.

Lin's reaction to the charges against him were not immediately known. Efforts to reach him by phone at his Monte Sereno, Calif., home were unsuccessful.

In addition to Lin and his newly formed company,

IBM's complaint seeks legal action against a non-IBMer named John R. Wilson. Together, the defendants "embarked on a deliberate course of illegal conduct... with the purpose... of causing injury to IBM," the suit alleges.

To compensate IBM for those alleged wrongs, the complaint requests an unspecified sum of punitive damages. The suit also seeks

an injunction and a temporary restraining order requiring the defendants to return all their allegedly stolen IBM technology and barring them from further disclosing the trade secrets or developing disk-related products.

IBM's thin-film media technology forms the basis of advanced products like the Model 3380 direct-access storage device. Thin-film disk systems provide much

higher recording densities than ordinary particulate-media products and have the additional advantage of being compatible with selected low-cost substrates.

After much expensive research and development, IBM claims to have made significant technological breakthroughs relating both to the composition of thin-film disks and to the process by which they are created.

Mathematica Acquisition In Progress

(Continued from Page 67)

federal government. Mathematica derived about 45% of its \$32 million fiscal 1982 revenues from various civilian federal agencies, which supported much of the activities of Mathematica's Policy Research Group. And Martin Marietta is one of the country's largest defense contractors.

"I can't say that their government work was of much interest to us, but I do know that our work with the civilian agencies interested them," Fabian said. "The level of government work has been important to both companies."

Talks between the companies were initiated six weeks ago, after Mathematica had been approached by "a few other companies" that Fabian declined to name.

Fabian also said that the three groups that make up Mathematica — Products, Mattech and Mathematica Policy Research — will remain intact when the acquisition is finalized.

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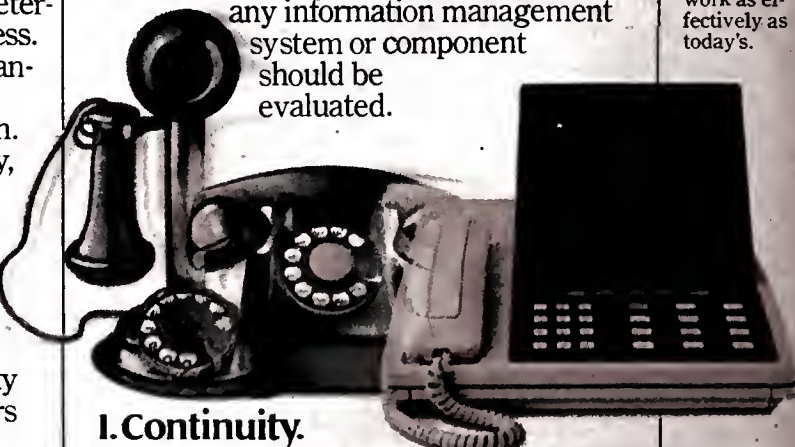
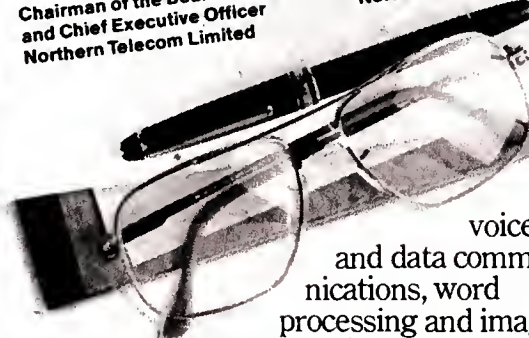
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ISX Dropped, Wescom 580 Discontinued

Datapoint, Rockwell Drop Out of PBX Mart

ANAHEIM, Calif. — Datapoint Corp. and Rockwell International Corp. have dropped out of the increasingly competitive private branch exchange (PBX) marketplace. These announcements were made just a few days prior to the opening here of the annual National Computer Conference.

Datapoint is making the

change through the sale of its Communications Management Products Division to Teknekron Industries, an Incline Village, Nev.-based venture research firm. Datapoint will maintain an undisclosed equity position in its former division, which will be transformed into a new company by Teknekron, according to a spokesman.

Only three of the Datapoint ISX PBX models, first introduced in 1981, are reportedly installed. Harold O'Kelley, chairman and chief executive officer of Datapoint, said his firm will focus its attention on office automation and other business communications products.

The departure of the ISX leaves the firm's Arcnet as

the bulwark of its office communications systems. Arcnet is a local-area network designed to facilitate the use of Datapoint computer and terminal products.

Rockwell International is dropping its Wescom 580 digital PBX outright, although a spokesman said Rockwell will continue accepting orders for the system

until Sept. 30. All marketing activities will officially cease June 1.

Some 200 of the Wescom 580s are installed, and another 20 to 30 are on order.

AT&T Enters Bid to Build TAT-8 Cable

LONDON — AT&T tendered a bid here this month to build the world's first undersea communications cable utilizing optical fibers and laser-powered transmission.

The phone company's system would enable two fiber pairs to transmit 40,000 simultaneous phone calls — more than four times the number that can travel over TAT-7, the latest copper transatlantic cable, which will begin service next July.

AT&T was one of several bidders for the TAT-8 cable, which is expected to go into service by mid-1988. It is being financed by 28 North American and European communications companies at a cost of about \$300 million to \$450 million. It will run from multiple points in Canada and the northern U.S. to locations in England, France and/or Spain.

AT&T's SL Lightwave Submarine Cable System operates at an information rate of 280M bit/sec, which normally can accommodate only 4,000 voice channels. But capacity has been increased tenfold through use of speech processing.

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to evolve to meet future needs, to accommodate future technological developments, and to provide new features. Only in this way can it be "obsolescence-proof."

not lock you in to a single source or limit options in the future. And the system should also provide the tools to control the cost and flow of information in your organization.

5. Cost-effectiveness.

The bottom line. Long-term financial considerations, as well as initial cost, must be

considered. All of the other four criteria—continuity, compatibility, congeniality and control—have a bearing on cost-effectiveness.

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2. Compatibility.

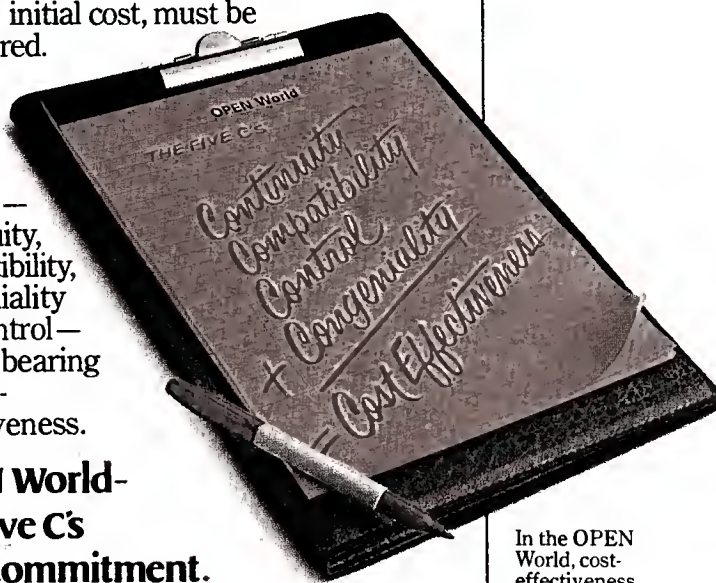
Many makes and types of equipment must be able to work together as a harmonious whole. Components and systems from different manufacturers and transmission channels from different suppliers all must be compatible.

3. Congeniality.

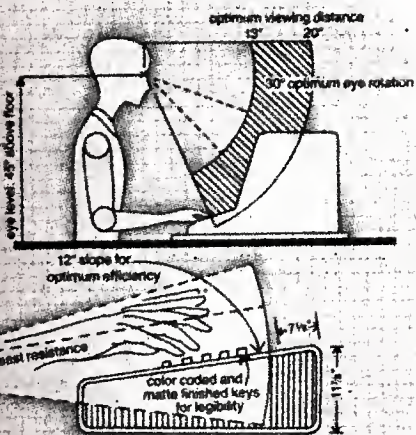
If people find equipment or systems intimidating, unattractive, or difficult to use, they simply won't use them. Even advanced technology should be attractive and simple to use.

4. Control.

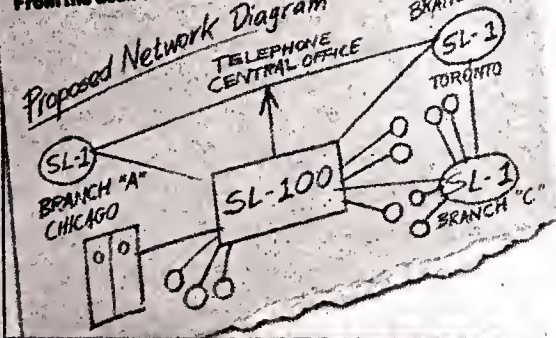
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The Conference Program

Thursday, June 23 & Friday, June 24

The Thursday and Friday conference program is divided into four major "tracks," but you are not required to sign up for a particular group of sessions. You may select the sessions you need from any of the 48 sessions available and create a conference program designed to suit your unique information needs. You may even choose to attend one day instead of two if you want. A detailed agenda will be sent to you prior to the conference for your advance planning, so you don't waste a minute!

Special General Session for Thursday Attendees:

The Revolt of the Masses: Micros and the Changing Role of DP.
(5:00-6:00 p.m.)

Dr. Michael Hammer, President, Hammer & Company

1. Personal Computing in a Corporate Environment

For Executives in large corporations who are involved in using micros in distributed data processing or as standalone executive workstations, the EMCE conference program includes:

Keynote: Increasing Corporate Productivity via the Personal Computer (Thurs., 9:00-10:00 a.m.)

Mayford Roark, Executive Director of Systems, Ford Motor Company

The Executive/Professional Workstation (Thurs., 10:00-11:00 a.m.)

Evelyn Wilk, Consultant, Arthur Andersen & Co.

DTP with Microcomputers (Thurs., 2:00-3:30 p.m.)

Moderator: *Jerrold Eisen, President, Office Sciences International*
Panelists: *Phil Dixon, MIS Manager, Apple Computer; Robert A. Miller, Special Assistant to the Deputy Secretary of Treasury, U.S. Treasury Department*

The Information Resource Center (Friday, 3:45-5:15 p.m.)

Moderator: *Thomas Kosnick, Researcher, Stanford Business School;*

Panelist: *Alan Gross, Director of Systems, International Paper Company*

The Role of Apple and IBM in Corporate Computing (Friday, 3:45-5:00 p.m.)

Moderator: *David Biomell, Publisher, "PC World"*

New Issues of Confidentiality and Security in Organizational Information Processing (Friday, 9:00-10:00 a.m.)

Professor Alan F. Westin, Columbia University

Personal Computer Acquisition and Implementation Strategies (Friday, 10:00-11:00 a.m.)

Don L. Eddy, Principal, Office Futures Now, Inc.

Compatible Systems and Software for the IBM PC (Friday, 2:00-3:30 p.m.)

Moderator: *Steve Cook, Technical Editor, "PC World"*

Panelists: *Chris Larson, Product Marketing Manager, MS/DOS, MicroSoft; Steve Flannigan, VP Software, Compaq Computer Corp.*

2. Introduction to Microcomputing and its Applications

For Executives who are concerned with the selection and use of microcomputers primarily in smaller businesses, the EMCE conference highlights:

Keynote: The Personal Computer: The Mouse that Roared! (Thurs., 9:00-10:00 a.m.)

Levi Kornfeld, Director, Tandy Corporation

How to Buy a Personal Computer (Thurs., 10:00-11:00 a.m.)

Lawrence Geroni, Director, Geroni Microcomputer Training School, Boston, MA

Spread Sheet/Financial Applications (Thurs., 2:00-3:30 p.m.)

Moderator: *Hamah Blank, Vice President-MIS, Chase Manhattan Bank*

Panelists: *Seneel Kelkar, Mktg. Mgr., Standalone Products, VisiCorp; Russell Warner, Product Mktg. Mgr., End user Products, MicroSoft*

New and Future Trends in Personal Computing (Thurs., 3:45-5:00 p.m.)

John C. Dvorak, Editor, "InfoWorld"

Word Processing Packages for Personal Computers (Friday, 9:00-10:00 a.m.)

Susan Harmon, President, Transitions

DBMS on Personal Computers (Friday, 10:00-11:00 a.m.)

Adam Green, President, SoftwareBanc

A Look at Integrated Software Packages (Friday, 2:00-3:30 p.m.)

Moderator: *Dan Coursey, Sr. Market Analyst, International Data Corporation*

Panelists: *Chris Morgan, VP, Communications, Lotus Development Corp.; Brian Fischer, Sr. Vice President, Context Management Corp.; Roy Folk, OEM Customer Mktg. Mgr., VisiCorp*

Panel: Executive Personal Computer Success (Friday, 3:45-5:15 p.m.)

Moderator: *Alan Sueider, Partner, Laventhol & Horwath*

3. Technological Developments in Personal Computing

For Executives who wish to keep up with changing microcomputer technologies in mass storage, business graphics, operating systems, and more, the EMCE conference highlights:

Keynote: The Future of Personal Computer Software for Business (Thurs., 9:00-10:00 a.m.)

Dan Fylstra, Chairman, VisiCorp

What's New in Peripherals (Thurs., 10:00-11:00 a.m.)

Peter Burgess, President, Burgess Management Associates

Developments in Personal Computer Business Graphics (Thurs., 2:00-3:30 p.m.)

Moderator: *Dave Needle, Sr. Writer, "InfoWorld"*

Developments in Mass Storage Capabilities (Thurs., 3:45-5:00 p.m.)

Moderator: *Will Zachmann, VP, Office of Technology Assessment, International Data Corporation*

Utilities (Friday, 10:00-11:00 a.m.)

Haines Gaffner, President, LINK

Popular Programming Languages (Friday, 10:00-11:00 a.m.)

Gordon Eubanks, Vice President, Commercial Systems Division, Digital Research, Inc.

Operating System Selection: 8 to 16 Bit (Friday, 2:00-3:30 p.m.)

Moderator: *Maggie Canon, Editor-in-Chief, "InfoWorld"*

Panelists: *Gordon Eubanks, VP-Commercial Systems; DRI; Jean Yates, President, Yates Ventures; Mark Ursino, OS Marketing Mgr., Microsoft Inc.; Natalie Shuttleworth, Manager of OS Mktg., Apple Computer*

Developments in Networking (Friday, 3:45-5:15 p.m.)

Moderator: *Will Zachmann, VP, Office of Technology Assessment, International Data Corporation*

Panelists: *Mark Stahlman, Dir., Mktg. Development, General Instrument Corp.; Art Simon, Director of Mktg., Commercial Services, Warner-Amex Cable Communications Inc.*

4. Microcomputer Market Opportunities For Entrepreneurs, Dealers, Distributors and Systems Houses

we'll offer sales and venture capital strategies you won't want to miss. Session highlights include:

Keynote: Retail Opportunities in the Personal Computer Marketplace (Thurs., 9:00-10:00 a.m.)

James Finke, President, Internetwork, Inc.

Software Packaging and Distribution (Thurs., 10:00-11:00 a.m.)

Will Luden, Director of Marketing and Retail Communications, Micropro International

Raising Venture Capital for Software and R&D (Thurs., 2:00-3:30 p.m.)

Moderator: *Jim Furneaux, Partner, L.F. Rothschild, Unterberg, & Towbin*

Legal Issues for the Retail Distributor (Thurs., 3:45-5:00 p.m.)

Walter Klasson, Brown, Raysman & Millstein

Market Update: Competition from Japan (Friday, 10:00-11:00 a.m.)

Robert C. Wood, President, Robert Chapman Wood Company

Successful Training Strategies for Vendors and End Users (Friday, 2:00-3:30 p.m.)

Sue Cornwall, NEC Information Systems; Stephanie Rosenbaum, President, Tec-Ed

Delivering Good Maintenance, Service & Support (Friday, 3:45-5:15 p.m.)

John Harnett, Director of Planning and Development, TRW Customer Service Division

Scaling the Corporate Account: Problems & Pitfalls (Friday, 9:00-10:00 a.m.)

Special Program for Educators

Saturday, June 25

Co-sponsored by T.H.E. Journal

For Educators and Administrators, EMCE will hold a special seminar on Saturday, June 25th entitled Microcomputers in Education which includes the following sessions designed to suit the unique needs of education.

Keynote: Computer Assisted Instruction in Education (8:30-9:30 a.m.)

Dr. Sylvia Chap, Editor-in-Chief, T.H.E. Journal

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The Executive Microcomputer Conference and Exposition (EMCE) is sponsored by the Conference Management Group of CW Communications/Inc., publishers of *Computerworld*, *InfoWorld*, *ISO WORLD*, and *PC World*.

Computer Funding and Acquisition (9:30-10:30 a.m.)

Ann Cullather, Education Legislation & Technology, Washington, D.C.

Logo: An Educational Language (10:45-11:45 a.m.)

Richard Carter, Director, Educational Laboratories, Lesley College

Teacher Training (1:15-2:15 p.m.)

Kevin Dwyer, Training Director, Unicom

Administrative Applications for Educational Institutions (2:15-3:15 p.m.)

Patricia Carter, Computer Applications Specialist, MASBO Co/Op

Educational Computing at Home (3:30-5:00 p.m.)

Moderator: Scott Mace, Sr. Editor, "InfoWorld"

Panelists: Ken Komoski, Executive Director, Educational Products Information Exchange Institute; Richard Robinson, President, Scholastic Inc.

Special Hands-On Workshop

Thursday, June 23 & Friday, June 24

In addition to the main conference program, EMCE will offer a two-day Executive Microcomputer Workshop for those professionals who wish to get hands-on experience with an Apple or IBM Personal Computer. The workshop will focus on four specific applications: spreadsheet analysis using VISICALC, data base management using dBase II, graphics and communications. An in-class network will be set up to demonstrate the communications capabilities of personal computers. The two-day seminar will run concurrently with the EMCE Conference program and will include admission to the exhibits and special feature sessions on Saturday, June 25.

The Executive Microcomputer Workshop will be sponsored by the Personal Computer Learning Center of New York City and will be held at the Center, located at 1120 Avenue of the Americas, on Thursday and Friday June 23 & 24th. **Enrollment is limited**, so please register early with your choice of hands-on using either an Apple or an IBM PC.

FREE Feature Sessions for All Saturday Attendees

FREE Special Feature Sessions for all Saturday EMCE attendees (exhibit or conference) will be held Saturday, June 25 from 9:00-1:00 p.m. The sessions will focus on professional applications for micros and starting your own home based business or office, and will also discuss the personal computer's impact on family life, kids and recreation.

1. The Home Office — Basics

Getting Started — Hardware & Where to Buy (9:00-10:00 a.m.)
Daniel P. Coursey, Senior Market Analyst, International Data Corp.

Software Applications — Selection & Uses (10:00-11:00 a.m.)
David Lamb, Sr. Research Associate, LINK

Setup & The First Six Months (11:00 a.m.-12:00 noon)
Paul Conover, President, Praxsys Communications

Programming Languages (12:00 noon-1:00 p.m.)
A. Richard Miller, Partner, Miller Microcomputer Services

2. Professional Applications

A Look at Spread Sheet Applications (9:00-10:00 a.m.)
Ralph Wagner, President, Microsource/Financial, Inc.

Investment Management Applications for Micro's (10:00-11:00 a.m.)
Jon Zonderman, Contributing Editor, "Computer Update"

On-line Data Base Systems (11:00 a.m.-12:00 noon)
Steven Sieck, Dir., Electronic Information Program, LINK

Word Processing Packages for Microcomputers (12:00 noon-1:00 p.m.)
Ronnie Marshak, Contributing Editor, "The Seybold Report"

3. Home/Family Microworld

Household Management (9:00-10:00 a.m.)

Micros for Organizations & Groups (10:00-11:00 a.m.)

Home Micro-Based Businesses (11:00 a.m.-12:00 noon)
A. Richard Miller, Partner, Miller Microcomputer Services

Micros: Impact on Family Life, Kids & Recreation (12:00 noon-1:00 p.m.)
Dan Oehlsen, Executive Producer, Children's Computer Workshop

Over 100 Professional Exhibits at EMCE

EMCE exhibits offer the latest in business-oriented hardware, software, peripherals, systems, accessories and resources from a wide selection of suppliers including companies like IBM, Digital Equipment Corporation, BASF Systems Corp., Computerland, Addison Wesley, GRID Systems, Micro Systems International, Key Software and Victor Electronics . . . to name just a few. EMCE's designed for you to see, touch and learn what you need to know about micros. **Your conference registration includes complete, 3-day exposition attendance.** Or you can sign up for the exhibits only. If you register in advance, using the form in this ad, you get two bonuses:

1. **Early admission** — only conference registrants and advanced registrants will be admitted to the hall between 11 a.m. and NOON on Thursday and Friday.
2. **\$5.00 discount** on admission price.

Register for EMCE now! The Sheraton Centre in New York City is the place; June 23-25, 1983 are the dates. Exposition hours: 11-7, Thursday and Friday; 10-6, Saturday. For more information on the conference and exposition, dial 1-800-225-4698 (In Massachusetts, 617-879-0700) and ask for Louise Myerow.


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| ☐ Executive Microcomputer Workshop* | \$595 |
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| ☐ Choose one: ☐ Apple ☐ IBM PC | |
| ☐ Micros in Education | \$ 95 |
| ☐ Sat. June 25 | |

*Includes Saturday Special Features Programs

Conference registrants only may register by phone: Call 800-225-4698. In Mass. call collect 617-879-0700 and ask for Louise Myerow.

Registrations Cancelled later than June 15 are subject to a \$50.00 service charge. Registration may be transferred at no charge.

EMCE — Sheraton Centre, New York City June 23-25, 1983

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- ☐ YES! Register me for EMCE (fill out attached conference form)
☐ YES! Register me for EMCE Exhibit Only (fill out attached exhibit form)
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Exhibit Only Registration

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☐ Advance Pre-Paid 1 day exhibit registration \$10 (\$15 at door)
☐ Thurs. ☐ Friday ☐ Saturday

3-Day Exhibit Registration Includes Special Feature Sessions on Saturday, June 25th from 9:00 a.m. to 1:00 p.m.

You must enclose your check or charge information. We cannot bill you or take your exhibit registration over the phone. Exhibit registration is non-refundable.

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Xerox Signs Support Pact

ANAHEIM, Calif. — Xerox Corp. has negotiated a service and support contract with Corona Data Systems Inc. a Westlake Village, Calif. manufacturer of software compatible IBM personal computer systems, it was announced at the National Computer Conference here recently.

Under the terms of the agreement, Xerox will provide on-site support for Corona's products and it is expected to be the first of several service agreements to be announced by Xerox over the next few weeks. Industry analysts say the contract is an attempt by Xerox to use its support facilities to encourage small micro-computer vendors to enter the Fortune 1000 marketplace while agree-

ing to a long-term service contract with the office products giant.

To date, many large corporations have been reluctant to purchase personal computers from small vendors because they fear a lack of follow-up support services. As a result, established vendors such as IBM and Apple Computer, Inc. have largely dominated the market for microcomputers.

Division Aims To Improve User Service

(Continued from Page 67)

Crawford said that before the reorganization, his division was only a "peddler of iron" in the vertical markets it was serving. Now his group is in a position to become a broad-based supplier of total system solutions within these markets, he claimed.

"In short, we are moving from being a product supplier to a systems supplier," Crawford said.

"Our customer relations are changing. We are trying to augment our products so we can deliver more of a solution to the customer instead of just providing the tools," noted Mary Zak, manager of DG's small systems product marketing.

While the General Systems Division still procures the majority of its software through OEMs, Zak said the division is beginning to work more closely with its end users in terms of developing and marketing the software. Zak said the division is now writing software that is more user friendly and is rewriting its documentation so that it takes on an end-user orientation. "We are also putting a lot more emphasis on customer support," she added.

Zak said the company's recent adoption of the Ada programming language for its MV series of superminicomputers (CW, May 9) will help its efforts to penetrate not only the office automation market but also the industrial automation market.

While not widely known, DG has been a major supplier of systems to the military through OEMs, such as Rolm Telecommunications, according to Crawford. In addition to military applications, the firm will use Ada in medical and mapping applications, he said.

Crawford thinks DG's high-end supermini, the MV/10000, will be the key to success in the industrial automation market because of its processing power.

"The 10000 should do well because it can handle the large data bases associated with [computer-aided engineering]," Crawford contended.

Crawford said DG is also placing increased emphasis on vertical product integration, which has resulted in increased profit margins and a tighter quality control.

"You also get greater efficiency out of your software through vertical integration because you know the hardware you are dealing with and can optimize [the software] for that processor," Zak added.

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HP Reports Strong Second-Quarter Gains

PALO ALTO, Calif. — Hewlett-Packard Co. has reported strong second quarter gains in both revenues and profits, with domestic sales reportedly providing the thrust for the

growth of the company.

Revenues at HP totaled \$1.17 billion, up 13% compared with the same quarter a year ago, while quarterly profits rose 16% to \$109 million, or 86

cents per share, as compared with earnings of \$94 million or 76 cents per share a year ago.

Incoming orders for the quarter were pegged at \$1.23 billion, an in-

crease of 14% compared with last year. Domestic orders from the firm lead the charge with an increase of 25%. International orders, on the other hand, were significantly slower than those in the U.S., rising only 2% during the same period, according to HP.

Commenting on the company's performance, John A. Young, HP's president and chief executive officer, said, "It still may be too early to call this a recovery, but we are very encouraged."

"We have seen little improvement in major markets outside the U.S. Europe is especially weak, with order levels for the quarter essentially flat compared with a year ago," he maintained.

Maguire Leads Software AG from Woods

(Continued from Page 67)

"It was a gigantic mistake for us to get involved with consulting in the first place," Maguire said. "I resisted the move for years, but finally submitted to internal pressures and began planning consulting offices all over the country. I spent a lot of time the last year closing those offices."

"Now we refer customers to people who make a living consulting with an expertise in our products," Maguire continued. "We are also subleasing a lot of empty offices. It's been a painful experience."

There were other hurts along the way. Late last year, the company paid out \$1.5 million to settle a suit with Mini-Technology, Inc. involving marketing rights of Adabas-M, Software AG's data base management system for Digital Equipment Corp.'s PDP-11 and VAX-11 minicomputers.

With the company's bottom line improving, Maguire said he is ready to move out of line operations, adding he is now searching for a replacement for himself to effect his return to chief executive duties.

Claiming "the pipeline's never looked better," Maguire outlined reasons why he believes Software AG "is very close to returning to the high profit levels we enjoyed before our big slide."

For one thing, the company recently landed a U.S. Defense Department contract which could lead to multiple installations of its full range of products, tailored to the military's specifications. Maguire said the government is footing the bill for extensive product development using Adabas, its Natural application development language and Com-Plete teleprocessing system for online control.

But Maguire is pinning Software AG's greatest hopes in what he termed a "long-standing belief in a

relational view of the software future."

Brushing aside a recent financial analysis claiming Software AG lacks a strong research organization, Maguire said the company's research efforts "have always tilted toward user-friendly, which had not been too popular with systems programmers wanting to optimize the machine and not their own time."

Thus, Software AG's next version of Natural, which Maguire said will be released this quarter, will be "pure relational."

Asked if his company might broaden its offerings to include products in the rapidly growing applications area, Maguire said, "A lot of companies will choose to go down that road, like Cullinet [Software, Inc.]. But we won't go that route."

Nielsen cable network product usage survey, NHI Sept. '82. Subject to qualifications, available upon request.

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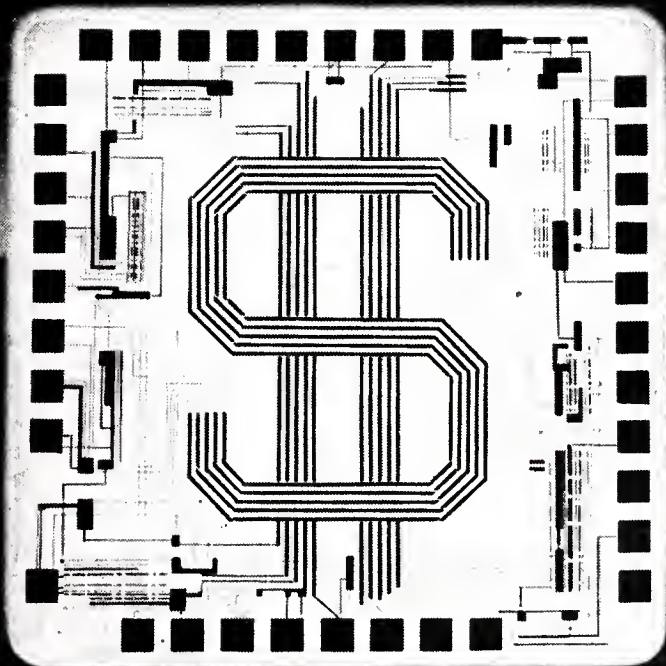
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concentration of male viewers, we deliver more upscale men per household than the broadcast networks. All for a low out of pocket cost. How do we do it? It's simple. ESPN is the Total Sports Network. And as everyone knows, men love to watch sports. And that's exactly what they've been doing.

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NETWORK SPORTS SCHEDULE (6 SPORTS ANNOUNCEMENTS)	250.0	32.3	100	26.8	83	27.3	85
NETWORK + ESPN (5 NETWORK SPORTS 8 ESPN ANNOUNCEMENTS)	250.0	30.1	93	34.8	108	42.3	131

SOURCE: July '82 NTL On-Line Curve Facility. Costs based on 1982 industry estimates.



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In addition, you'll get coverage of software products other than applications software packages that are *used by programmers rather than by end users*. These will include decision support systems, fourth generation languages and application development systems.

We're going to wrap software productivity packages up for you with application stories and case studies that describe actual end user experiences with these products. And you'll get non-product-specific tutorials that describe new concepts and ideas regarding software productivity packages.

Why is *Computerworld* devoting so much energy and coverage to these packages? Because you're gobbling them up as fast as they're developed. Because this segment of the software marketplace is growing at an incredible rate of 34% per year. And because these products are helping thousands of DP professionals



to reduce application backlog and to design and tailor applications that enhance productivity.

You'll get stories specifically designed to help you buy and plan better, like:

"How do you determine what kind of programmer productivity aids you need?"

"When do you know when you need a programmer productivity package?"

"Trends in mainframe operating systems."

"What role does DP play in a company's use of a decision support system?"

"How do programmer productivity packages affect overhead and CPU resource utilization?"

For these and many more stories designed to ask — and then answer — all your questions, just turn to your June 27th copy of *Computerworld's* Special Report on Software Productivity Packages.

And if you *sell* software productivity packages to professional DPs or to end users, you won't find a better place to reach your customers. They'll be reading this Special Report. Ad deadline is June 10th, and your *Computerworld* salesperson can give you all the details. Or, to be sure and get your ad included, just call Don Fagan, Vice President, Sales at (617) 879-0700.



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Local Area Networks are Expanding...

It isn't every day that a company as well-established and highly regarded as Codex Corporation goes into "start-up" mode for a new technology. But that's exactly what Codex is doing. And if you are a computer scientist or engineer with experience in microprocessor products, data communications, or local area networks, you can make a major contribution to our Local Area Network start-up...and share in the rapid growth that we plan for this crucial new business area, located at our New Product Development engineering facility in Canton, Massachusetts.

Codex is extending its product line to provide data communications and networking capabilities for local, metropolitan, and wide-area networks, providing services such as:

- ☐ Electronic Mail
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- ☐ Gateways
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We seek good people, and we will back them with all of our resources to create the network products of the future. Contact us today if you have experience in:

- ☐ Microprocessor and digital logic design
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- ☐ Software design and enhancement
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Interested applicants please forward your resume to:

Mr. Bob Lippman
CODEX CORPORATION
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- Real-time software engineering
- Minicomputer programming
- Systems requirements
- DEC VAX
- HDLC X.25

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RCA

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A key assignment in analysis, programming, and data reduction. Minimum requirements:

- B.S. in Physical or Computer Science
- 5 years experience as a manager or leader of technical personnel
- 10 years working experience with large scale computers (preferably CDC) together with several years experience with reduction of range instrumentation data.
- Working knowledge of ASSEMBLY and FORTRAN languages.

RCA offers excellent fringe benefits and competitive salaries.

If interested and qualified, please call Mrs. C.A. Grimes at 305 494-6987 to arrange an interview or send resume with salary requirements to:

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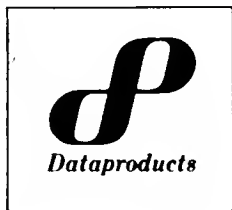
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We have outstanding opportunities for Software Engineers with BSCS, EE or CE degrees. You should have a background in microprocessor design using 8086/8088 Assembly and PLM languages for real-time controls, computer graphics or interface protocols. Opportunities for all levels of experience from 0 to 5 years plus.

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The Printer Company



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Incumbent will translate application system designs into plans of instructions and logic by which computers produce desired actions or products. Required qualifications: 3 years general experience (education above the high school level is acceptable substitute) and 2 years of specialized experience. Incumbent needs knowledge of overall design and operating principles of related computer systems, detailed and specific knowledge of the work processes, rules governing file design, and knowledge of computer related clerical procedures of the applications programs assigned.

COMPUTER SYSTEMS ANALYST/82-44 \$29,025-31,345 per year (Lead Analyst)

Incumbent will perform analysis and design tasks within the computer center's systems development section, which is responsible for developing future university computer systems and long range plans for administering systems and program. Qualifications required: 6 years experience, including 3 years progressively responsible general experience in data processing (A Bachelor's Degree in Computer Science or other related fields may be substituted), 2 years of specialized experience with CICS in a CS environment (COBOL is preferred but not required), and 1 year of specific experience in advanced computer equipment, in the applications systems design techniques, and in programming or systems.

COMPUTER PROGRAMMER ANALYST \$26,390-28,480 per year

Incumbent will be a Lead Programmer Analyst in the computer center. Qualifications required: 6 years experience, including 3 in progressively responsible general positions in data processing (Bachelor's Degree in Computer Science or other related areas may be substituted), 1 in systems analysis and design techniques which demonstrate project management responsibility in at least 1 application area, and 2 years of specific experience.

Please submit applications to University of District of Columbia, Office of Personnel Management and Development, Building 39, Room A09, 4200 Connecticut Ave., NW, Washington, DC 20008, Attention Yvonne Chandler or Diane Gordon.

Deadline for submitting applications is July 1, 1983

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TRW has an immediate opportunity for development and implementation of innovative computer applications in manufacturing and finance. Experience of 3 or more years preferred, with degree in information systems field. Location is an electronic components manufacturing facility in the university/resort community of Boone, North Carolina in the beautiful Blue Ridge Mountains.

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The National Academy of Sciences, a prestigious Washington D.C. non-profit institution, which has been addressing important national issues for over 100 years, has a career opportunity for an energetic individual to join its Office of Automation Services.

Position involves major responsibility for systems software in a rapidly evolving environment. Other responsibilities will include assisting in the evaluation of new options and setting shop standards. Applicants should have a strong background in systems software with at least 2 years' experience in IBM DOS/VSE, CICS, VTAM and ALC programming. Knowledge of data base concepts helpful. Environment also includes distributed processing with Wang, FOUR PHASE and micro-computer systems.

The National Academy of Sciences offers an excellent fringe benefit program, liberal annual and sick leave, paid holidays and retirement plan with immediate full vesting. Starting salary up to \$35K depending upon qualifications and experience.

Please send resume, including salary requirements, to: Personnel Office (142.024), National Academy of Sciences, 2101 Constitution Avenue N.W., Washington, D.C. 20418 or call (202) 334-3401 for further information.

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Position 3: Indepth knowledge of VS1/BPE, VTAM, SMP and OS, SCP's (VS1 and MVS). Guest operating system under VM/SP (Mandatory).

Please submit resume and/or call Bill Denny, Vice President for appointment. (904) 398-7371.

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DATA SYSTEMS COORDINATOR/SECTION CHIEF. Salary: \$23,678-31,067. Involved with Sysgen for DOS/VSE maintaining TP network and DDP with IBM and 4 Phase equipment. Requires BA/BS in Computer Science, Electrical Engineering, Math or related field and 5 years experience in programming and systems design of which 2 years must include progressively responsible administrative and supervisory experience.

Send resume to: Alachua County Personnel, P.O. Box 1467, Gainesville, FL 32602.

Deadline: June 15, 1983.
Note: Applications and resumes are subject to disclosure under The Florida Public Record Law. AA/EOE

WASHINGTON, D.C. HP3000 PROGRAMMER/ANALYSTS

Large office products distributor/retailer has immediate openings for Jr. and Sr. P/A with business background. HP3000 COBOL and IMAGE experience required. Duties include development of programs to convert existing systems to HP3000/64. BASIC, Microdata or PRIME experience desirable. Excellent advancement opportunities. Company benefits include competitive salary, tuition reimbursement, medical/dental insurance. Send resume to:

Bob Templeman
GINNS
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Hyattsville, Md 20782

SR. SYSTEMS ANALYST. In charge team of programmers designing & implementing computer systems related to financial insts. Responsible for maintenance & enhancement of systems, & providing vital skills to ensure successful & cost effective operations. B.Sc. or equiv. in Computer Science, Data Processing, Math. or Physics. Must have knowledge of COBOL & ASSEMBLER. 2 yrs exp. or 2 yrs in programming. \$32,000 p.a. to work 35 hrs/5 days/wk PLEASE SEND RESUMES. Acsis, Inc., 90 John Street, NY, NY 10038.

New Department Head position search re-opened: Computer Information Systems and Management, Tarleton State University, a part of the Texas A&M University System. Applicants should have Ph.D. or D.B.A. in either computer discipline or in management, with evidence of significant skills and background in the other field. Demonstrated business and/or academic leadership skills essential. College teaching experience. Salary range to \$50,000 for 12 months. Send resume to Dr. LaVelle Mills, Search and Screen Committee, Tarleton State University, Box T-2001 Tarleton Station, Stephenville, Texas 76402. Deadline July 1, 1983 or until position is filled. An Affirmative Action, Equal Opportunity Employer.

SYSTEMS ANALYST--To analyze business procedures and problems to refine data and convert it to programmable form for electronic data processing; to study existing data handling system of firm's clients in order to evaluate effectiveness and to develop, design and implement new systems to improve production or work flow, as required. B.S. Degree in Computer Science required. Must be familiar with data base management (DMS II) and message control (MCS) systems in on-line large-scale computer environment; must be proficient in COBOL 74 and reporter languages; must have familiarity with Burroughs B 1900 and microprocessor 8086. Must be willing to work evenings and weekends when required. Salary \$21,500/year. Apply with resume to Atlanta Job Service Center, One Peachtree Street, Atlanta, GA 30303, Job Bank Number 73921.

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Success. You make it happen when you've got what it takes. And a great product makes it happen faster. That's where Calma comes in.

We make products that support our reputation as a world leader in computer-aided design and manufacturing (CAD/CAM) technology. A reputation that can only be maintained by hiring the best people. If you have what it takes to make it at Calma, look into the following career opportunities:

Programmer, VAX/VMS

- Analyze performance and develop creative solutions to enhance response of our graphics system
- BS/MS in computer science or math and experience with performance monitoring tools
- Experience with VAX/VMS system programming and tuning

Programmer, Scientific Applications

- Work on enhancements to CAD/CAM software
- Experience in scientific applications
- BS in computer science or math

Programmer, Manufacturing Applications

- Two positions, including a senior position, are available
- Design, implement and test software for computer graphics manufacturing applications
- Senior position requires 3-5 years' experience with computer graphics, and manufacturing applications experience; BS in engineering is preferred
- Second position requires 1-3 years' experience, preferably in manufacturing; computer graphics or programming; manufacturing knowledge (education and/or experience) and the ability to apply it is essential

Programmer, Communications

- Integrate communications capabilities with CAD/CAM software

Programmer, Database/Systems

- Integrate database management control systems into CAD/CAM software

Programmers

- Design and implement analysis formatter
- BS in math, computer science or engineering
- 2-5 years' experience in FEM and CAD/CAM systems

Manager, Architectural Group

- Responsible for leading a small group in developing state-of-the-art CAD/CAM architectural product line
- BS/MS/PhD in architecture, and 3-5 years' experience

Software Quality Assurance Engineers

- Develop creative solutions to verify and validate software in the applications areas of architecture, construction, mechanical and manufacturing
- BS/MS in engineering, design or computer science, and 2-5 years' experience in engineering/design including programming

Please send your resume to Sue Speed, Calma Company, Dept. S530C, 11080 Roselle Street, San Diego, CA 92121.

Software Design Engineer

- Develop software for communication boards, interfaces, controllers, graphic subsystems
- Multiprocessing environment background
- Two years' experience with machine level code, UNIX, microprocessors and communications

Communications Group Software Development (Two Openings)

- One management opportunity with past management/supervisory experience needed
- One staff member with 2-5 years' experience
- Both positions will develop Calma's future communications software
- Both positions require technical knowledge of systems communications and networks
- Familiarity with large, real-time, high speed software systems development

Senior Member, Programming Staff

- Responsible for maintenance and enhancement of Calma's GDSII software
- Knowledge of applications and system software for CAD systems
- Experience with assembly and high-level languages

Sr. Diagnostic Programmer (3 openings)

- Committed to specification analysis before design and coding, structured design, detailed documentation, design for maintainability, comprehensive testing
- Responsible for manufacturing and QA diagnostics
- Minimum of BSEE preferred, MSCS helpful
- High-level language skills required (FORTH optimal, but Pascal, PL/1 or ALGOL acceptable).

Software Support Manager

- Manage department of 10 programmers involved in writing diagnostic programs
- Specify goals and project tasks and scheduling to meet completion deadlines
- Provide high-level technical guidance and assistance to staff
- BS in computer science, math or engineering
- 5 or more years' computer programming experience, including one or more years in VAX or DG assembly languages and one or more years as project leader, supervisor or manager of programming department

Sr. Diagnostic Engineer

- Write, maintain and support diagnostic programs for the Calma range of products, based on DG eclipse, DEC VAX and Apollo (6800) systems
- Supply diagnostic tapes for customer engineers
- BS in computer science, math or engineering and 6-9 years' related experience
- 3 or more years' experience in computer programming, including 6 months in VAX Macro assembler or DG Nova/Eclipse assembly language
- Hardware analysis or troubleshooting experience highly advantageous

National Technical Support Manager

- Direct the technical support for field service personnel
- Administer department budgets, goals and objectives
- BS in engineering or related field and 4-6 years' engineering management experience in a computer-based system environment

Technical Support Engineer

- Provide phone and on-site support to field service, and help in problem solving
- Experience with DEC, VAX and/or Data General

Director Communications, Software Products

- Responsible for directing several advanced communications software product teams
- BSEE plus 10 years' in software/hardware development with a minimum of 5 years' management experience
- Knowledge of local and wide area networks as well as microwave, fiber optics, and satellite communications capabilities

Please send your resume to David Ward, Calma Company, Dept. W530C, 2901 Tasman Drive, MS LS2FF, Santa Clara, CA 95050. We are an equal opportunity employer, m/f/h.

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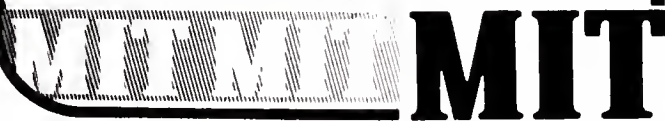
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MIT Data Processing

Systems Programmer for an opening in the Department of Aeronautics & Astronautics. Primary responsibility to set up and manage a Perkin Elmer-based CAD/CAM system, two VAX 750 systems, a PDP-11/10, and a PDP 11/23 system. Will perform system generation and software maintenance; assist in selection and integration of new hardware into these systems; assist with application software, particularly computer graphics; serve as coordinator for hardware maintenance requests; and provide consultation for students and faculty. Requires advanced degree in Engineering or Computer Science, general knowledge of minicomputer operating system software and FORTRAN. Working knowledge of VAX system software and assembly language preferred. Please submit 2 copies of resume, referencing Job No. R1067, to: Prof. James W. Mar, c/o MIT Personnel Office, E19-239, 77 Massachusetts Avenue, Cambridge, MA 02139.

Computer Programmer for an Office of Sponsored Research Staff position with the Department of Electrical Engineering & Computer Science. Will support microsystems (VLSI) Program. Duties include: maintaining implementations of programming language Nial on VAX, IBM, PC, and DEC System 20 computers; implementing and maintaining a file-based framework for VLSI and integrated-system CAD tools; preparing and maintaining system for distribution of VLSI software and libraries; maintaining various languages of interest in VLSI design; installing imported VLSI software; coordinating activities of faculty, students and staff. Requires 2 years' related experience, along with ability to work independently toward commonly understood set of goals. Background in VLSI or willingness to be trained in same essential. Knowledge of high-level languages, especially C, also vital. Some experience with UNIX operating system helpful. Please submit 2 copies of resume, referencing Job No. R1068, to: Mr. Kenneth W. Chin, MIT, Personnel Office, E19-239, 77 Massachusetts Avenue, Cambridge, MA 02139.

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ADMINISTRATIVE
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Bowdoin College seeks an individual with an AB/BS with knowledge of business or college accounting practices, familiarity with on-line data base techniques, and the programming competence equivalent to 2 years of programming experience. Knowledge of FORTRAN will be desirable.

The Administrative Applications Coordinator will be responsible for the conversion, design, documentation and maintenance of programs for financial and other administrative records through an on-line, integrated file approach using a relational data base system as a fundamental tool. Additional responsibilities will include some training of administrative personnel in the use of relevant systems.

The Computing Center has a DEC System 1091 operating under TOPS-10 with 2.5 megabytes of memory and 900 megabytes of disk storage. The system serves administrative and academic users through 48 on-line terminals.

The college offers competitive salary and fringe benefits. Send letters of application and a resume before June 22, 1983 to:

Myron Curtis, Director
Computing Center
Bowdoin College
Brunswick, ME 04011
*Bowdoin College is an Equal Opportunity/
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MANAGER, TELECOMMUNICATIONS
Northern Arizona University
of Flagstaff, Arizona

Seeks a well-experienced manager for the Telecommunications Department. Progressively responsible experience in telecommunications including both technical knowledge and managerial experience. Major responsibilities include planning, organizing, directing and controlling the overall telecommunications operation. (The University is interested in developing immediate plans for the purchase or lease of a new telephone system).

Qualifications

An appropriate Bachelor's degree and a minimum of 5 years experience with telecommunications systems along with a minimum of 3 years of successful management experience. The chosen candidate must possess a broad and thorough knowledge of the telephone industry's product lines and services.

Applications

Letters of interest, resume, 3 written references and other pertinent information should be mailed (no later than June 15, 1983) to:

Chair, Manager-Telecommunications
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Northern Arizona University
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Flagstaff, AZ 86011

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Peer Services, Inc. supplies major national financial institutions with innovative D.P. services, the combined capabilities of skilled banking professionals and advanced computer technologies. We are completing a state-of-the-art IBM Data Center to provide financial software services to our parent organizations from our corporate headquarters in Dallas, Texas.

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For all positions above, candidates should have a Degree in Computer Science, Business Administration or equivalent experience in the areas above. Salary commensurate with experience. Please forward resumes complete with salary history to:

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AA/EOE

SENIOR SYSTEMS ANALYST/ DATA BASE MANAGER

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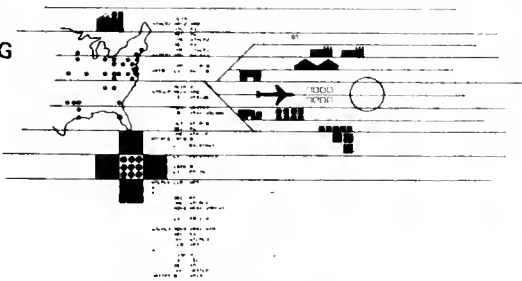
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Western Development Laboratories Division

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Manage daily activities of the university's UNIX-based text processing center. Bachelor's degree and experience with UNIX operating system preferred, with 2 to 4 years experience in text processing or related area, including supervisory experience. Competitive salary, plus university benefits. Send resume and references to: Joel L. Hartman, Center for Learning Resources, Bradley University, 1501 W. Bradley, Peoria, IL 61625. Position open until filled. An Equal Opportunity/Affirmative Action Employer.

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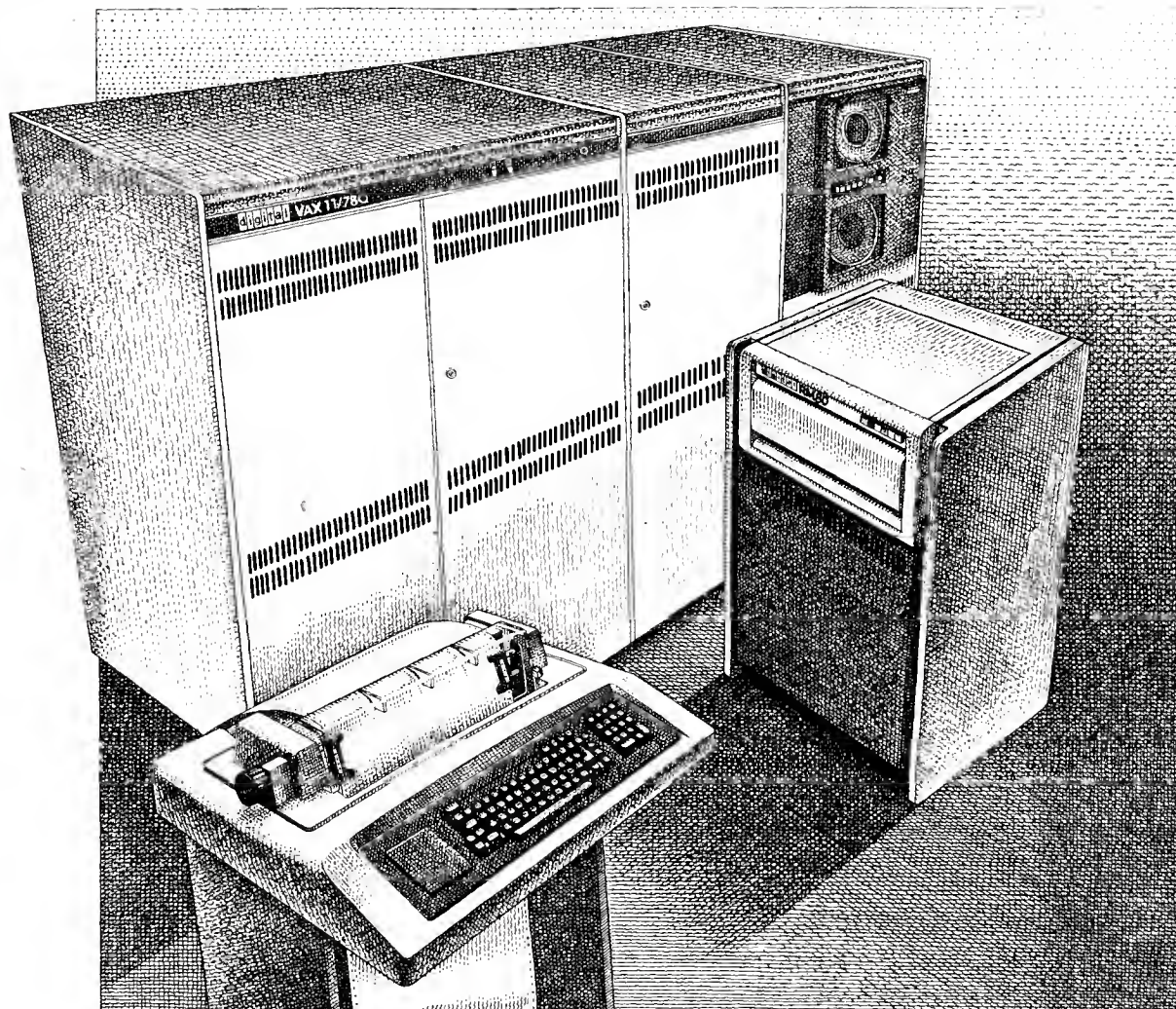
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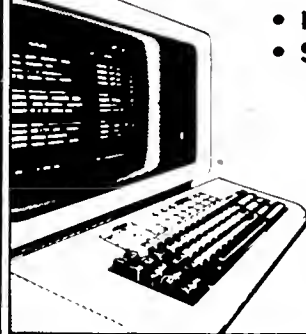
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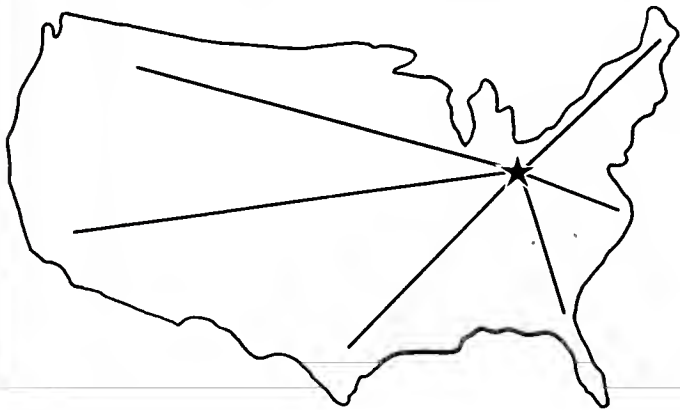
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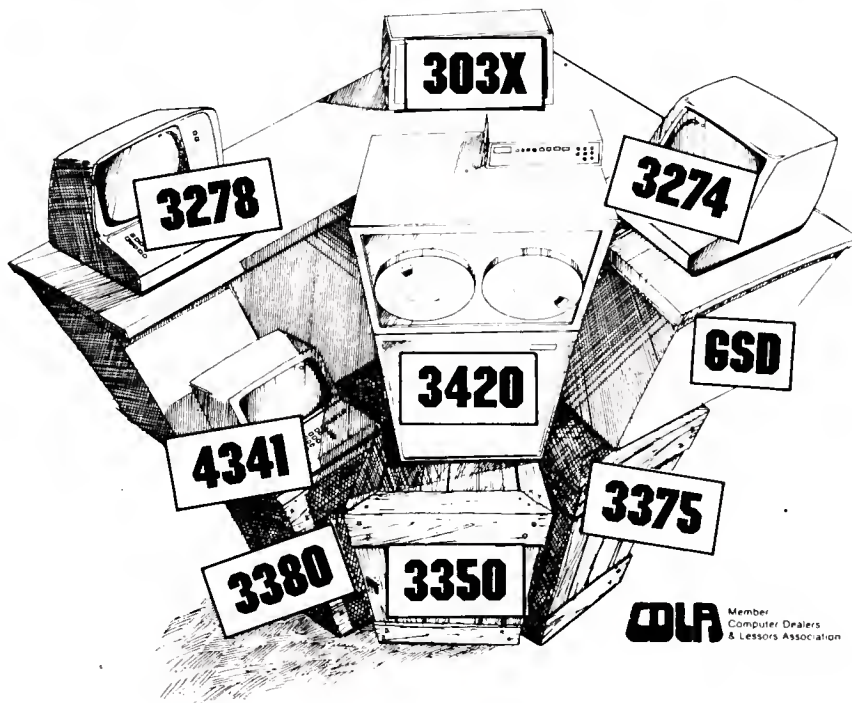
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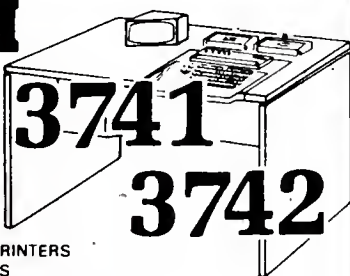
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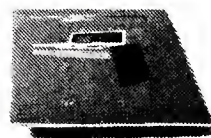
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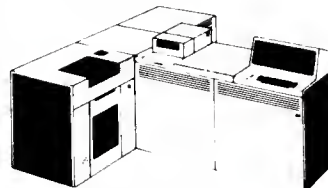
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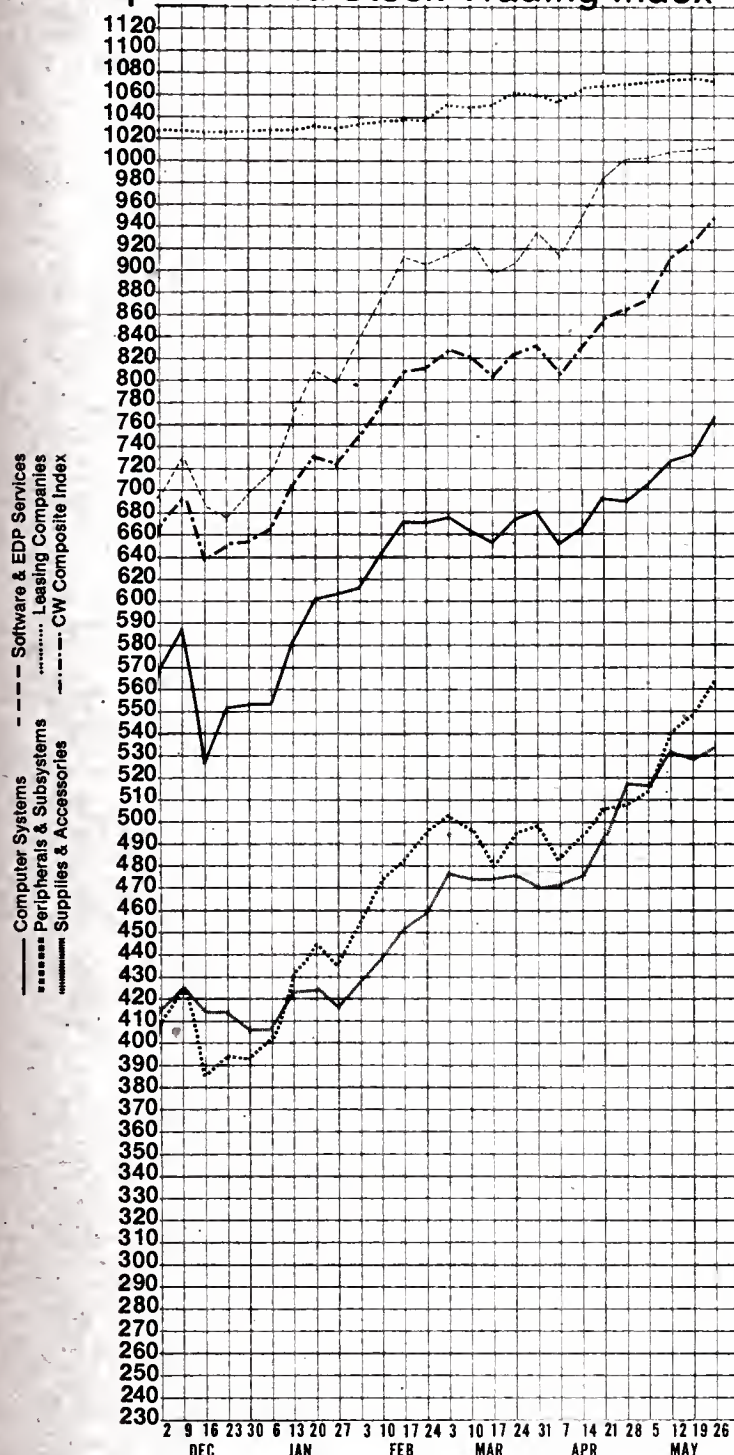
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Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, MAY 25, 1983

All statistics compiled,
 computed and formatted
 by
 TRADE QUOTES, INC.
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			1982-83	PRICE	WEEK	WEEK
			RANGE	MAY 25	NET	PCT
			(1)	1983	CHNGE	CHNGE
COMPUTER SYSTEMS						
A	AMDAHL CORP	17-53	52 5/8	+2 3/8	+4.7	
N	BURROUGHS CORP	28-53	53 1/4	+2 3/8	+4.6	
O	COMPUTER AUTOMATION	7-17	14 3/8	+1 1/2	+11.6	
A	COMPUTER CONSOLES	15-45	45	+2 1/4	+5.2	
N	CONTROL DATA CORP	21-59	59	+4 1/8	+7.5	
N	CRAY RESEARCH INC	20-49	47 1/2	+5 1/2	+13.0	
N	DATA GENERAL CORP	20-73	61 1/8	+3 5/8	+6.3	
N	DATAPoint CORP	11-36	22 1/4	+1 3/4	+8.5	
N	DIGITAL EQUIPMENT	62-132	113 3/8	+1 1/8	+0.1	
A	ECCO INC	5-14	13 7/8	-1 1/4	-1.7	
N	ELECTRONIC ASSOC.	5-12	11	+1 1/4	+2.3	
N	FLOATING POINT SYST	18-38	37 1/8	+7 1/8	+2.4	
N	FOXBORO	22-43	39 1/4	-1 1/4	-0.6	
O	FULCRUM COMP GRP	1-3	1/4	0	0.0	
O	GENERAL AUTOMATION	3-13	13 1/4	+2 1/8	+19.1	
N	HARRIS CORP	20-51	44 1/2	+1 1/4	+2.8	
N	HEWLETT-PACKARD CO	36-87	86 3/8	+3 1/4	+3.9	
N	HONEYWELL INC	60-124	121 7/8	+4 3/8	+3.7	
N	IBM	57-118	115 5/8	+3 7/8	+3.4	
O	IPL SYSTEMS INC	5-11	9 1/4	+1 1/2	+5.7	
D	MAGNUSON COMP SYSTS	2-5	3	0	0.0	
N	MANAGEMENT ASSIST	7-18	15	-1 1/8	-0.8	
O	MINI-COMPUTER SYST	1-2	1 7/8	0	0.0	
N	MODULAR COMPUTER SYS	6-15	14	-1 1/8	-0.8	
N	MOHAWK DATA 6CI	10-19	15	-3 1/8	-2.4	
N	NCR	39-125	124 1/4	+8 1/4	+5.2	
N	PERKIN-ELMER	17-33	30 3/8	+3 3/8	+12.5	
N	PRIME COMPUTER INC	16-45	31 3/4	+2	+6.7	
N	SPERRY CORP	21-38	37 7/8	+1 3/8	+3.7	
O	TANDEM COMPUTERS INC	14-34	32	+1 1/8	+0.3	
N	TEXAS INSTRUMENTS	71-176	158 1/4	+8 3/4	+5.8	
A	WANG LABS "B"	13-42	42	+2 5/8	+6.6	
A	WANG LABS "C"	11-42	42 1/4	+2 3/4	+6.9	

			1982-83	PRICE	WEEK	WEEK
			RANGE	MAY 25	NET	PCT
			(1)	1983	CHNGE	CHNGE
LEASING COMPANIES						
O	BOOTH FINANCIAL CP	22-45	43 1/2	-1 1/2	-1.1	
N	COMOISC. INC	7-33	32 7/8	0	0.0	
B	COMMERCE GROUP CORP	1-1	1/4	0	0.0	
O	COMPUTER INVSTRS GRP	1-2	1/2	0	0.0	
O	CONTINENTAL INFO SYS	5-24	21 3/4	-3 1/4	-3.3	
N	OPF INC	5-14	13 3/8	-3 1/8	-2.7	
O	ITEL	1-3	1 1/8	0	0.0	
O	LEASPCORP	1-2	1/8	0	0.0	
N	U.S. LEASING	18-47	44 1/4	+1 1/2	+1.1	

EXCH: N=NEW YORK; A=AMERICAN; P=PACIFIC; B=BOSTON;
 L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
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			1982-83	PRICE	WEEK	WEEK
			RANGE	MAY 25	NET	PCT
			(1)	1983	CHNGE	CHNGE
SOFTWARE & EDP SERVICES						
O	ADVANCED COMP TECH	1-6	5 1/2	+1 1/2	+10.0	
O	ADVANCED SYSTEMS INC	9-28	27	-1	-3.5	
O	AGS COMPUTERS INC	7-25	25 1/4	+2	+8.6	
O	AMERICAN SOFTWARE	22-30	30 1/4	+3	+11.0	
N	ANACOMP INC	9-23	17 7/8	-1 1/2	-7.7	
O	ANALYSTS INTL CORP	5-14	13 1/4	-1 1/4	-1.8	
A	APPLIED DATA RES.	8-36	35 1/2	+2 1/2	+7.5	
O	ASK COMPUTER SYSTEMS	12-36	34 7/8	+1 3/8	+4.1	
B	ASTRADYNE COMP IND	1-7	5 1/2	-5 1/8	-10.2	
N	AUTOMATIC DATA PROC	21-42	39 1/2	+1 1/8	+0.3	
O	CGA COMPUTER ASSOC	5-15	14 3/4	+3 1/4	+5.3	
O	COMPUTER ASSOC INT'L	8-31	29 1/4	+1 1/2	+1.7	
O	COMPUTER HORIZONS	8-22	22	-3 1/2	-13.7	
O	COMPUTER NETWORK	4-10	9 3/8	-3 1/8	-3.8	
N	COMPUTER SCIENCES	11-23	17 3/4	-3 1/4	-4.0	
O	COMPUTER TASK GROUP	8-22	22 1/4	0	0.0	
O	COMPUTER USAGE	2-22	18 1/2	+1 1/2	+8.8	
O	COMPUTONE SYSTEMS	15-38	18 1/4	-3 1/4	-3.9	
O	COMSERV CORP	10-20	16 1/4	+2	+14.0	
O	COMSHARE	6-13	11	+3 3/8	+3.5	
N	CULLINET SOFTWARE	12-45	44 3/4	+3 1/4	+7.8	
O	CYCARE SYSTEMS INC	9-27	25 3/4	0	0.0	
O	DATA DIMENSIONS INC	1-2	3/4	0	0.0	
O	DATATAB	0-2	3/4	0	0.0	
O	DYATRON CORP	2-4	3 1/8	-5 1/8	-16.6	
N	ELECTRONIC DATA SYST	19-66	66 1/4	+1	+1.5	
N	INFORMATICS INC	10-34	33 3/4	+2	+6.2	
O	INSYTE CORP	1-3	1 3/4	+1 1/8	+7.6	
O	IPS COMPUTER MARKET.	1-2	1 1/8	0	0.0	
O	KEANE ASSOCIATES	4-13	10 1/2	-1	-8.6	
A	LOGICON	12-38	37 1/8	-3 1/8	-1.0	
O	MNGT SCI AMER INC	8-31	29 3/4	0	0.0	
O	MATHEMATICA INC	12-26	25 3/4	0	0.0	
O	MATHEMATICAL APP GRP	12-22	18 1/2	-1 1/4	-1.3	
O	NATIONAL DATA CORP	5-26	24 1/8	+5 1/8	+2.6	
O	PANORPHIC SYSTEMS	8-27	26 3/4	+1 1/2	+5.8	
N	PLANNING RESEARCH	6-21	20 1/2	+1 1/2	+7.8	
O	POLICY MGMT SYSTS CP	36-59	55 1/4	+3	+5.7	
O	PROGRAMMING & SYS	1-5	4 5/8	+1 3/8	+42.3	
O	REYNOLDS & REYNOLD	17-46	42	0	0.0	

			1982-83	PRICE	WEEK	WEEK
			RANGE	MAY 25	NET	PCT
			(1)	1983	CHNGE	CHNGE
PERIPHERALS & SUBSYSTEMS						
P	AM INTERNATIONAL	2-7	6 1/2	+3 3/8	+6.1	
A	ANDERSON JACOBSON	9-26	19 1/4	-5 1/8	-3.1	
O	AUTO-TROL TECHNOLOGY	8-21	18	-1 1/2	-2.7	
O	BANCTEC INC	7-33	16 1/4	0	0.0	
A	BEEHIVE INT'L	4-15	12 3/4	-1 1/8	-8.1	
A	BOLT, BERANEK & NEW	13-69	68 5/8	+8 1/4	+13.6	
O	CAMBOX CORP	2-4	1 7/8	0	0.0	
N	CENTRONICS DATA COMP	6-22	20 7/8	+5 1/8	+3.0	
A	CETEC CORP	4-10	9 3/4	0	0.0	
O	COGNITRONICS	2-14	12 7/8	+3 3/8	+3.0	
O	COMPUTER COMMUN.	1-2	1 3/4	0	0.0	
O	SEI CORP	11-34	33	+1 1/2	+1.5	
O	SHARED MEDICAL SYST	13-37	36 3/4	-1 1/8	-0.3	
O	SCIENTIFIC COMPUTERS	6-13	12	0	0.0	
B	SOFTWARE AD	5-17	11	+1 1/2	+15.7	
N	TYNSHARE INC	12-30	24	+7 1/8	+3.7	
A	URS CORP	5-14	13 1/2	-1 1/8	-0.9	
N	WYLY CORP	7-16	16	+1 7/8	+13.2	

			1982-83	PRICE	WEEK	WEEK
			RANGE	MAY 25	NET	PCT
			(1)	1983	CHNGE	CHNGE
SUPPLIES & ACCESSORIES						
N	AMERICAN BUS PROOS	11-27	25 3/4	+1 1/8	+4.5	
O	BALTIMORE BUS FORMS	1-2	3/4	0	0.0	
N	BARRY WRIGHT	13-27	27	+3 1/4	+2.8	
O	CYBERMATICS INC	1-1	1 1/4	0	0.0	
A	DUPLIX PRODUCTS INC	12-26	24 1/8	-5 1/8	-2.5	
N	ENNIS BUS. FORMS	16-39	38 1/2	+1 1/8	+0.3	
N	3M COMPANY	49-87	87 1/4	+1 1/2	+1.7	
N	MOORE CORP LTD	26-51	50	-1	-1.9	
N	NASHUA CORP	9-20	20 1/4	+1 3/4	+8.4	
O	STANDARD REGISTER	32-103	102	-1	-0.9	
N	HALLACE BUS FORMS	11-28	25 3/8	-5 1/8	-2.4	

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1. Can you offer us a complete range of software systems designed to work together?

Or will we have to piece together a patchwork of systems?

2. Are your systems just record keepers, or can they really help us make decisions?

Can we pull together information from any of our integrated systems? In exactly the form we want it?

3. Can you provide business software for both mainframe and microcomputers?

Do you develop this software yourself or do you simply market it for another company?

4. Are your systems truly online so all of our information is current?

How many of your systems are online? How secure are they?

5. Will my company have to be the one that discovers the bugs in your brand new system?

Just how long have your systems actually been used, and how have they been tested?

6. Will you update your systems as technology advances and regulations change?

What are some of your most recent updates? Will you keep us current on regulatory changes?

7. Do your systems really do everything you say they will?

Or will we have to change them or add to them to get the features we want?

8. How long have you been in business?

What are your revenues? What is your growth record? Where will your company be five years from now?

9. How many systems has your company installed?

How many of these were installed in the past six months? How many of your earlier customers are still using—and liking—your systems?

10. Do your financial systems handle unlimited foreign currencies?

Do your financial systems use a common set of currency exchange rates?

11. Can you link our executives' computers directly to the mainframe—so they can get their own information?

Is that software available right now?

12. How will you make sure our own people thoroughly understand your system?

Do you have educational centers near us, or will we have to travel all the way across the country to find one? Will you be there to help during installation and after?

13. How many of your people specialize in software for my industry?

How many accountants work for you? Human resource specialists? Manufacturing experts?

14. Do your systems have built-in features that make them easier to use?

What happens if someone needs help figuring out a feature? Do you have online documentation that's easy to understand?

15. As my business changes will your system be flexible enough to change with it?

Or will we have to pay a lot to revamp it? Or even regenerate it?

35,000 days of training

At MSA, we make sure your people have a firm grasp of our systems. Last year alone, we conducted more than 35,000 student days of customer training for over 1,800 companies. At education centers all over the world, as well as at our headquarters.

From training sessions to cassettes to complete, easy-to-understand documentation, MSA provides the most extensive Customer Education Programs in the industry.

And MSA systems are just as friendly as our people. Our online HELP feature actually guides users through our systems, and EASY-SCREEN™ lets them design their own screens without creating data processing nightmares.

If there's ever a question or problem with our systems, MSA customers are always close to service.

Our Account Managers are knowledgeable, responsive, and backed by a complete team of industry specialists.

The heart of our integrated systems

It's MSA's General Ledger System. Combined with Accounts Payable/Purchase

Order Control and our other systems, it gives your company complete control over your financial information.

Over 800 data process-

ing specialists, accountants, and financial experts work together to make MSA's financial systems the most advanced and most highly integrated in the industry.

MSA has the answers

Whatever your size—whatever your business—MSA has a total software solution.

We'll provide the highest quality integrated online software.

We'll tie your business and manufacturing software systems together, using our exclusive Extended Closed Loop™ manufacturing system.

We'll provide business software for your microcomputers, through our Peachtree Software Company.

We'll even link your microcomputers to your company's mainframe—with MSA's Executive Peachpak™ application

MSA ready-to-install applications software

1. General Ledger
2. Accounts Payable/Purchase Order Control
3. Budgetary Control/Encumbrance
4. Fixed Assets Accounting
5. Capital Expenditure Tracking
6. Forecasting & Modeling
7. Accounts Receivable
8. Foreign Exchange
9. Inventory & Purchasing
10. Payroll
11. Personnel Management & Reporting
12. ALLTAX™ Taxing System
13. ALLTAX Reporter™
14. Manufacturing Control System (MRP II)
15. Executive Peachpak™
16. Peachtree Software™ business systems for microcomputers
17. Peachtree Software™ office productivity systems for microcomputers

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